

HARDWARE & UTILITIES

Introduction

This is our first attempt at putting together a collection of hardware "add-ons" and utility programs for Spectrum & Commodore owners. As such it marks a significant improvement in the service to our members, providing a permanent reference source for such items. Our plan is to update it as and when necessary (probably every six months) and we'd like your help in getting the next one together. We particularly want to publish reader's comments on the products we review and to include whole reviews from Club Members covering any hardware or utilities you may own. So, if you're using a product that you think should be in our supplement and you're prepared to write a sensible review on it, please give us a ring (to check that no-one else is doing the same item). All published reviews will be paid for (rates on application).

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Mr.
Software



JOYSTICKS

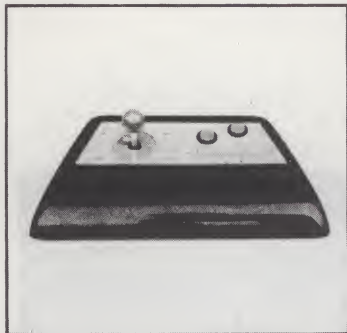
Nowadays, if you want to buy a joystick you could well be confronted with a choice of many different types, with only the manufacturer's claims of innovations to go by. Which joystick? We hope that this section will be able to help you choose.

Many, many joysticks were tested, and the following are the ones that we thought were worth buying — or perhaps worth warning against buying. After we had investigated the construction of the Joysticks we gave them to our reviewers to play with. They devised what they considered a fair test for each of the joysticks — subjecting them to the rigours of "Daley Thompson's Decathlon" (Ocean), the

fast action of "Airwolf" (Elite) and the slow, guiding of "The Designer's Pencil." The aim of the tests, they told us, was to try out the joysticks on different types of games — "Decathlon" which involves furious wagging of the joystick from side to side, "Airwolf" which demands total control over a helicopter that has to manoeuvre around caverns and mazes, using the fire button a lot as well and "Designer's Pencil" in which the joystick is used to control a Pencil on the screen, and the joystick's ability to move smoothly and be easy to control is tested. The results of these tests — which are called test 1, test 2 and test 3 respectively, are incorporated in the reviews.

Arcade Professional

Manufacturer:
Euromax
Machines:
16/48K Spectrum, Spectrum + (both with interface); Commodore 64



Comments:

The Arcade Professional certainly lives up to its name as it has both the feel and the looks of a joystick that you might find in a games arcade. It is certainly the largest joystick that we have seen, and also, unfairly, the most expensive. At the back the joystick base is 22cm long and about 5cm high, sloping down to a front length of 33cm and a height of about 2cm. The bottom of the base of the joystick is covered in foam, under which there is a steel sheet enclosing the joystick mechanism. The top of the casing is in black plastic with small glittery flecks in

it, and painted silver around the stick and fire buttons. The lead is 90cm long, and has a standard D type plug on one end, and the other end enters into the back of the joystick. The joystick is really only suitable for table-top use, and is solely, and unthoughtfully, for right-handers.

The stick itself is comfortably short, measuring about 6cm, and composed of a short, strong and uncovered steel shaft with a red plastic ball on the top. The joystick uses strong microswitches, and when you move it there is an audible click. The two fire buttons are well placed and easy to use.

Reviewer's View:

Definitely a luxury, the Arcade Professional is nevertheless a well built and sturdy joystick. It stood up to the rigours of "Decathlon", and the console stayed in place, even when the joystick was furiously moved about. One useful feature, I'm not sure if it was intentional or not, is that you can push the lead back into the casing. However this also leads me to suppose that the casing is remarkably hollow, and the components no more sophisticated than those in

the other joysticks in the Euromax range. It seems that Euromax consider that a doubling or trebling in the size of the casing is unfortunately equatable to a doubling or trebling in price! Nevertheless, it seems that many people are prepared to shell out that sort of money for a joystick. If I could I certainly would!

Ratings:

Lastability: 90% — excellent — micro-switches ensure strength.

Construction: 80% — steel shaft is strong, but base is hollow.

Ergonomics: 70% — only table top and only right handed. Stick comfortable and fire buttons are easy to use — very fast.

Order Code: ARCPRO.

The Arcade

Manufacturer:
Suza
Distributor:
Euromax
Machines:
16/48K Spectrum, Spectrum + (with interface); Commodore 64



Comments

The Arcade is the cheapest joystick in Euromax's micro-switch joystick range. It has a single red fire-button, placed at the point of the black base, and is totally suitable for either left or right hand play. On the bottom of the base there are three very small pads, that do not really grip very well with quick movement of the joystick. We found that it was best hand-held, which is really a two handed affair, with one hand operating the actual stick, and the other gripping the base and pressing the fire button. At the front of the joystick, under the fire button there is a small depression that further aids the natural grip of the joystick with the thumb on the fire button and the fore finger in the depression.

The stick itself is black and measures about 9cm in height, including the 3cm diameter knob on its top

The stick is made from strong steel and is the ideal length for comfortable play. When the stick or fire button is activated there is an audible click, coming from the micro-switches, that give accurate and reliable games' play, and in the unlikely event that they wear out these can be replaced. The lead is 140cm long, enters the front of the joystick, and is connected to the computer with the standard moulded D type plug.

Reviewer's View:

This joystick is unbeatable! It is probably one of the strongest that I have used, and when I put it to the ultimate test of strength, "Daley" Thompson's Decathlon, that has been the demise of many a good joystick, it passed with ease. The joystick also proved excellent on more traditional arcade games. The general movement of the stick is quite hard, and there is very little travel. I would say that it is definitely worth the extra money to anybody who plays a lot of arcade games and wants a fast and accurate joystick.

Ratings:

Lastability: 100% — the only things that could break are the micro-switches and even they are replaceable.

Construction: 89% — very strong, having a steel shaft with a positive, hard movement.

Ergonomics: 75% — easy and comfortable to hold in the hand but unfortunately not really suited to table top use.

Order Code: ARCADE

Formula Two

Manufacturer:
Kempston
Machines:
16/48K Spectrum, Spectrum + (with interface); Commodore 64



Comments:

Quite unusual in the world of joysticks, the Formula II comes in a really delightful shade of sky blue, with

beautiful contrast provided by white details and fire buttons! Joking apart, the colour does come as quite a shock when you are used to dull blacks and reds. The base of the joystick is a rectangle, and measures 12 x 9 cm. At each corner of the bottom of the base there are strong suction cups; these are black. The base is about 4cm deep, but slopes down at the front to about 2.5cm. On the front slope there are two flat white fire buttons, which are raised a little from the surface of the base. The lead is 140cm long and enters the front of the joystick. On the other end there is a standard D type plug.

The stick itself, like the fire-buttons, operates leaf-switches. The stick is Pistol-grip style and is 11cm high, with a small fire button at the top. At the bottom a small part of the shaft is visible and it seems to be made of plastic.

Reviewer's View:

The Formula 2 proved to be OK as far as slow arcade games are concerned, but anything fast or strenuous, like "Decathlon," was decidedly dangerous. I was alarmed to find that I could turn the stick through nearly 90 degrees without much effort at all. The fire buttons are also hard to use, since they slope away from the base.

Conclusion:

Probably aimed to compete with the "Quickshot 2," this joystick, although cheap, would definitely not leave you cheerful!

Ratings:

Lastability: 30% — treat it gently
Construction: 50% — the shaft seems to be plastic and creaks ominously
Ergonomics: 70% — hand-held or table top with strong suckers
Order Code: FORM2

Sure Shot

Manufacturer:

Cookridge Computer Supplies

Machines:

16/48K Spectrum, Spectrum + (with interface); Commodore 64



Comments:

Considered by the manufacturers as "The Ultimate Joystick Controller" the Sure Shot has three red fire buttons, one on each of the front corners of the base, and one on the top of the stick. The base is rectangular and measures 12 x 7 cm and is about 3cm deep. The 120cm long lead enters the front of the base and has a standard D type plug on the other end. The actual stick is quite long, at 11cm, and enters the base without any boss or cover; this looks quite unusual, even weak. The steel shaft, fixed to a steel chassis, is covered with rubber, with about a centimetre of the shaft left bare at the bottom. The joystick and the two base fire buttons operate microswitches, but as for the one on the top of the stick we are not so sure. Owing to its position it may be hard to fit it with a micro-switch, and even if it is, it doesn't really feel like one.

The unit can be either hand-held or used on a table top, but for hand-held use we found it somewhat uncomfortable, as it doesn't have rounded contours like many other joysticks. The four rubber pads hold the joystick down quite well, and are removable.

Reviewer's View:

The excellent construction should point to an ideal joystick, but for a number of reasons it is not. My main worry was the "loose" feel of the joystick — it tends to sway as you use it and has a very strong spring action to bring it back into the middle and counteract this — but I know that many people prefer this to a hard-to-move joystick. My other point of concern was the two base-mounted fire buttons — they make alarmingly loud 'clicking' noises, almost like on and off switches. This is probably due to the strength of the microswitches.

Conclusion:

Definitely not one of the most beautiful or comfortable of joysticks but probably the strongest!

Ratings:

Lastability: 98% — slightly larger than usual off the stick and the micro-switches are ap-

parently not replaceable. Nevertheless there is a manufacturer's one year guarantee.

Construction: 98% — excellent.

Ergonomics: 60% — a bit uncomfortable to hold and overly tough fire buttons.

Order Code: SUPAT

Quickshot II

Manufacturer:

Spectravideo

Machines:

16/48K Spectrum, Spectrum + (with interface); Commodore 64



Comments:

The Quickshot 2 is probably the best selling joystick of all time, and it is understandable why — it is reasonably cheap, it has the facility of auto fire and the comfortable Pistol grip position, and it looks good too. The base of the joystick is black plastic and measures 12 x 10 x 4 cm. The 130cm lead enters the front of the joystick case, and has a standard D type plug on the other end. The stick itself is 12cm high, and has two fire buttons on the top. One is for thumb operation, and the other is for the trigger finger. The stick has grips for the rest of the fingers to provide a comfortable hold. On the base of the joystick, just behind the stick there is an auto-fire switch which has two positions, on and off. When you turn it off the joystick acts like any other, with one depression on the fire button activating one shot. With the auto-fire switched on and the fire-button depressed this locks the fire button on, and continuous firing results.

Order Code: QUICK

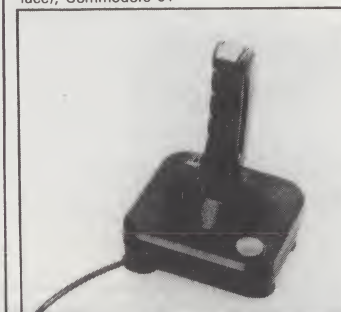
Challenger

Manufacturer:

Euromax

Machines:

16/48K Spectrum, Spectrum + (with interface); Commodore 64



Comments:

An extremely well made, Pistol grip joystick, the challenger offers direct competition to the monopoly that the "Quickshot 2" has held over the joystick market. In fact, internally, it is exactly the same joystick. The Challenger joystick has a circular base, under which there are four suckers to hold it onto the table-top. There are two fire-buttons, both mounted at the top of the stick. One is operated by the thumb and the other by trigger finger. The challenger is equally suitable for left or right handed players. The stick has ridges on it for the rest of the fingers to comfortably grip. The stick is 12cm high, the base diameter is 13cm, the lead enters the base in front of the joystick and is 120cm long, with a standard D type plug on the other end.

At the base of the joystick there is an auto-fire switch, which has two positions, on and off. When the switch is in the off position the fire button works the same as any ordinary fire-button, with one depression equalling one shot. When the auto-fire switch is turned on, then the player only has to keep the fire-button depressed for a constant stream of fire. Very useful on arcade games.

Order Code: CHALL

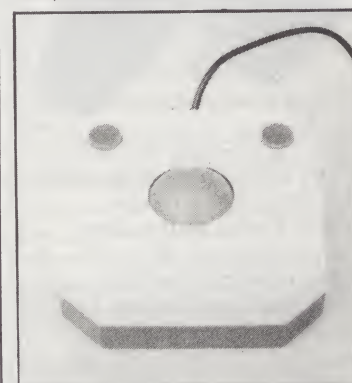
Trackball

Manufacturer:

Euromax

Machines:

16/48K Spectrum, Spectrum + (with interface); Commodore 64

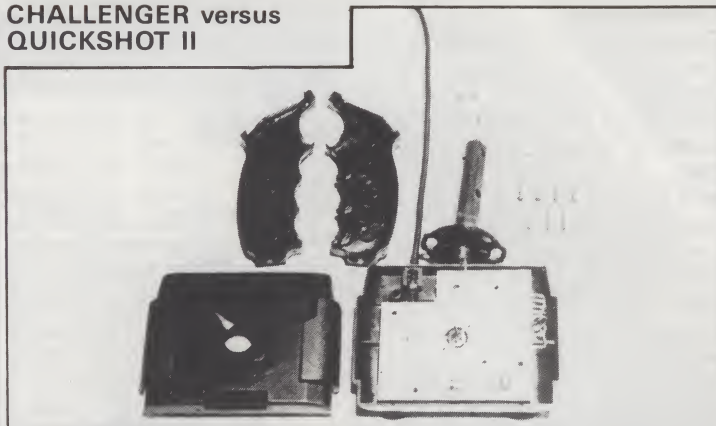


The "Trackball" is a hand held or table top version of the type of games control that you are likely to find in an arcade. It basically consists of a ball, mounted in a casing, that is free to move in any direction. Because of

JOYSTICKS

the nature of this games control is it really only suitable for guiding tasks. This is because unlike an ordinary joystick, you cannot hold it in one particular direction, instead you have to keep rolling it, and this is not very fast. However, for use on games where a cursor has to be moved around a screen, such as "Shadowfire", the Trackball really comes into its own. It is also excellently suited to utilities, especially drawing programs like "The Designer's Pencil" (Activision) and "Leonardo" (Creative Sparks). It is also very good on any business package that has a menu screen. The casing of the Trackball is shaped as a 15cm square with the corners chopped off. The lead has a standard D type plug and is 120cm. The two fire buttons, placed at the top left and right of the "Trackball" are red, as is the trackball. The casing is 5cm deep, the top half being white, the bottom red.

CHALLENGER versus QUICKSHOT II



The Inside Story:

Outside, the Challenger and Quickshot 2 don't feel or look that different — inside it's the same story, in fact, bar the different coloured wires, they are THE SAME. On each joystick the handle can be split in half by removing three screws down its side. This reveals the main stalk of the joystick, which is a hollow plastic tube, about 7cm high. At the top of the joystick there are two pads behind each of the fire but-

tons, and wires connected to these run down into the base through the hollow stalk. The fire button mechanism takes up the extra 6 or so cm that is the difference between the inside stalk and the outside handle. The stalk runs into the base where it joins onto a plastic circle with four points on it, each 90 degrees apart. These points in turn press down on four pads, which are leaf switches, which are directly below them when the

joystick is assembled. Each of these pads operates a direction — left, right, up or down. And that's about it! We were surprised to find that the construction was so apparently "Plasticky," but our reviewers assured us that these are all they use, and they should last a long time.

WHICH ONE?

Having proved that the joysticks are really exactly the same, the only deciding factor can be the price. The Quickshot 2 is the cheapest.

Ratings:

Lastability: 79% — internally they look pretty weak, but they seem to last a long time and give a good run for their money. They have the same problem as all the leaf-switch joysticks, in that they do eventually wear out, but that shouldn't happen too soon.
Construction: 70% — bit of a hard rating to choose as the construction does seem very "Plasticky," but it turns out to be strong!
Ergonomics: 80% — the Pistol grip of both joysticks is a natural and comfortable way of holding a joystick. Really for a table-top, but quite good in the hands.

On/Off Switch

Computer:
Spectrum 16/48K/ +
Manufacturer:
Supersellers
Review:
Tony Toller
Price:
£4.95



It has often been suggested that one of the major design faults of the Spectrum is the lack of an integral joystick interface. The other must surely be an on/off switch which amazingly Sinclair still did not see fit to include on the Spectrum Plus. Consequently, the repeated plugging in and unplugging of the wire from the transformer leads to wear in the Spectrum power socket. This in turn can cause programs to crash

unexpectedly and will eventually lead to expensive repair costs.

The answer to the problem lies in a neat little unit which plugs permanently into the back of your Spectrum or Spectrum Plus. The power lead connects into the back of this unit and the little switch on top then enables you to turn the power to the computer on and off at will without damaging any mechanical parts.

Please note that a **different** switch is required for the old style Spectrum and for the Spectrum Plus. Please be careful to order the correct unit for your machine.

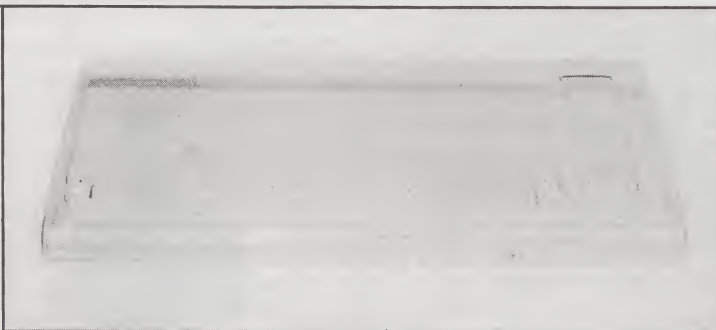
Order Code: Spectrum — SPSWI
Spectrum Plus — SP + SW

Dust Cover

Machine:
Commodore 64
Maker:
Anirog
Review:
Neil Atkinson

One of the problems about keyboards is that they're damned awkward things to clean. Dust seems to have a special attraction for getting right down between the keys and the muck always seems to stick hardest in the most inaccessible crevices!

The answer for Commodore 64 owners is this attractive dust cover from Anirog — who seem to be expanding more and more into hardware. Perhaps a little overpriced at £6.95, but still worth it to protect an expensive investment.



Order Code: CDUSCO.

Supertype

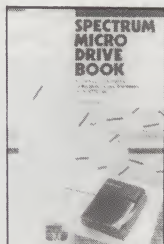
Computer:
Commodore 64
Publisher:
Precision Software Limited
Review:
Tony Toller
Price:
£25.95 (Disk)
£19.95 (Tape)

If you want to learn to touch type but are afraid of not being able to keep up at typing classes, then **Supertype** is the product for you. This latest release from software supremos *Precision Software* enables you to teach yourself at your own speed. Keyboard familiarity is accomplished initially using colour coding. A keyboard overlay is supplied for this purpose. With each new section you familiarise yourself with the new keys being introduced, then simply follow exercises set out for you by the computer. The software measures your accuracy and speed and can therefore suggest when proficiency has been achieved and the next section can be moved on to. Another excellent product from *Precision Software*.

Order Code: CSUPTY-D (Disk)
CSUPTY (Tape)

BOOKS

Spectrum Microdrive Book



Publisher:
Melbourne House
Author:
Dr Ian Logan
Machines:
Any model of the Spectrum
Category:
Book
Reviewer:
Sam Knowles
Order Code: SMB-B

The Spectrum Microdrive Book fills all the gaps left by the somewhat thin and poorly-thought-out Sinclair manual. Dr Ian Logan is not only the authority on Sir Clive's machines, but he also played a part in the writing of the 8K shadow ROM for the Interface I. If anyone can tell us, it is Dr Logan.

The cover to the box is a little off-putting. Trendy four-colour lines cut across and fly in different directions. Ignore this. There are six very good chapters in this book, which deal with the expanded system, the new commands in Basic, the microdrive itself, the local area networking system, the RS-232 link and the way machine-code programming is the only way to exploit the new devices to the full. I say 'new', because they *were* when this book was written. They are now a part of the establishment. Let us consider the chapters individually now.

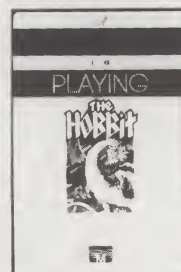
The tone of the book is highly technical and not for the novice. Dr Logan talks about the technicalities behind the connectors on the Interface I. He goes into detail on the paged ROM and lists the new system variables — 58 in all. Tips on how they can be used are included. Furthermore, even the electronics of the system are examined. Having dealt with the hardware, the firmware — controlling commands — are

the subject of the next chapter. This is a great deal more comprehensive than Sinclair's own effort, especially on use of the RS-232 connection. Dealt with fully also are the three types of file allowed — n, m and b, that is ones over the network, to and from the Microdrives and Binary files. The bonus statements CLS = and CLEAR = are examined.

The microdrive chapter is probably the best of the whole book. It is very full indeed, covering not only the expected ground of commands, care and so forth, but also more technical information on files and the physical format of the floppy tape. Dr Logan actually explains how the data is stored and looks at how to examine individual sectors of the tape. He also explains the physical and internal effects of any commands you use. The network is a very useful, very fast, highly effective part of the Interface I. More technical details are given here, as in the next chapter, that on the RS-232 link. Full explanation of formatting for both text and binary files is given. There are also the programs for and the results of an experiment with a BBC. It is quite possible to connect the two machines — from the RS-423 port on the BBC to the Spectrum's RS-232. It is also shown how both BBC Basic and 6502 assembly language written on a BBC can be saved onto Microdrive!! The final chapter is typical of the book. Highly technical, well written and clear to understand. All this despite the fact that it is dealing with a tricky subject — machine code and Interface I. Use of the various hook codes is suggested. The ROM routines which go to make up these hook codes are listed and explained. The final section of this chapter deals with new commands. Because of the error checking of the new shadow ROM, it is possible to adjust the system variable which returns the

machine to the original ROM so that it looks for errors in machine code routines high up in memory — your new commands — which in all ignorance it thinks are part of the ROM. Some actual new commands are given the necessary technical information for you to write your own likewise. A good, important book. Fairly cheap and extensive in its scope.

"A guide to playing the Hobbit"

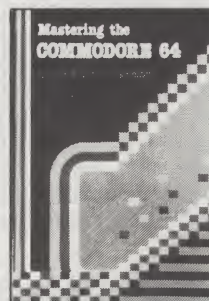


Publisher:
Melbourne House
Reviewer:
P. Hatter

A necessity for all adventurers still wrestling with "The Hobbit." A well-produced 76-page book containing illustrations of the screen graphics as they appear on the TV screen. The first 20 pages of the book are devoted to the vocabulary and the main places in the program. There is a helpful chart, showing possible directions of travel from various places. The remainder of the book is dedicated to the "Tourist's Guide to Wilderland", which is split up into every conceivable situation, with special passwords to enter areas otherwise inaccessible. It explains where you would end up by travelling in certain directions from all possible locations. Melbourne House claim this to be their best selling book — it's easy to see why!

Order Code: GTH-B

Mastering the Commodore 64

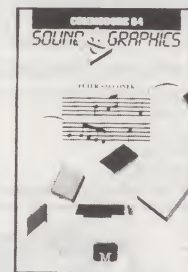


Machine:
Commodore 64
Publisher:
Melbourne House

An excellent text for the programmer who wants to get the most from his 64. All the techniques in the book are comprehensively explained and then illustrated by being used within sample programs — the book is worth getting for these alone! Just some of the subjects covered include: print formatting, logical operators, hexadecimal notation, arrays, binary search, memory management, the SID chips and envelope control, user defined characters, multicolour mode, extended colour mode, hi-resolution graphics, split-screen using interrupts....an introduction to machine code. 383 pages packed with usable information, recommended.

Order Code: MAS64-B

Sound and Graphics



Machine:
Commodore 64
Publisher:
Melbourne House
Category:
Book
Reviewer:
Andrew Goltz

An exciting book containing much original material. It makes the 64's sophisticated sound and graphics capabilities accessible for both the first-time user and the more experienced programmer. All the features are explained in easy-to-understand language and involve the reader/programmer in the design and coding of a full-scale game, which uses all the elaborate graphics and super-sound potential of the Commodore 64. The book also supplies general-purpose machine code routines like scrolling. Faster interrupt scheduler and music routine. Learn all about Sound and Graphics as you work your way through the program provided — and enjoy the game you will create. The book will enable you to harness the capabilities of the Commodore 64, to the full.

Order Code: SG64-B

SPECTRUM JOYSTICK INTERFACES

SPECTRUM JOYSTICK INTERFACES — THE BARE FACTS

There seem to be a lot of confused Spectrum owners when it comes to joysticks and interfaces. Why all the different makes? Which are compatible with each other?...etc....etc.

Basically, if you want to use a joystick on your Spectrum you have to have an interface of some sort for the simple reason that Sinclair saw fit not to include one when designing the machine. If they had, maybe they would have saved themselves a little less money but everyone else a lot of time and bother.

All joystick interfaces plug into the user Port — the longest hole on the back of the Spectrum. In turn,

joysticks plug into a Port, usually on top of the interface. When you load a game one of the first things that you nearly always have to do is choose between a Kempston, Sinclair, or Cursor joystick. Why? Well, each joystick, or rather each interface mimicks different keys on the Spectrum keyboard. For example the Kempston uses 1, 2, 3, 4, 5 for left, right, up, down and fire, while the Sinclair Interface 2 uses 6, 7, 8, 9, 0. So the cursor joystick mimicks the cursor keys 5, 6, 7, 8 and uses 0 for fire. The certain set of keys that each interface mimicks is known as its Protocol ie: the Kempston Protocol etc.

It would obviously be easier if Sinclair had set some sort of standard, but since they didn't it was left to other

companies to battle it out among themselves. This battle was won by Kempston whose small, cheap interface has been adopted as an industry standard. You should find that nearly all your games, even the very old ones, are compatible with the Kempston.

The other two Protocols — the Cursor and the Sinclair — are very much overshadowed by the Kempston. The Cursor because not all software companies made their games with the cursor option and the Sinclair because it has only been launched in the last eighteen months — too late to be compatible with many Spectrum owners' existing software libraries.

Some interface manufacturers have got around the problem of software/interface incompatibility by producing programmable interfaces. These have no fixed Protocol, and you can program the interface to mimick the keys used by the

game that you are playing. Sinclair, not content with causing enough confusion already, then decided to introduce the cartridge system, where on a suitably equipped interface you can plug in a small games cartridge. When you turn the power on, the game will load instantly. However, the other software manufacturers have been slow to take this lead up (because of the vast expense of cartridge production) and there are virtually no games available at the moment.

So, after all this which joystick interface would we recommend? Well, we are not going to make so bold as to recommend one outright, after all everyone has different factors that they consider important.

What we are doing is printing reviews of the best interfaces out of each category, so perhaps, we hope, we have made things a little less confusing!

Comcom Interface

Product Title:
COMCON Interface
Manufacturer:
Frel Ltd
Machines:
16/48K Spectrum, Spectrum +



This interface from Frel is probably the easiest programmable interface to use. There is really no "programming" to do with this interface as it is set up manually. The interface, which is quite large at 12 x 13 cm, overcomes the problem of how to program the interface by recreating the Spectrum keyboard, including space, caps shift, symbol shift and enter on the interface itself. Each key is represented by two pins. Coming from the back of the black box are six cables finished off with plugs. Each of these plugg-

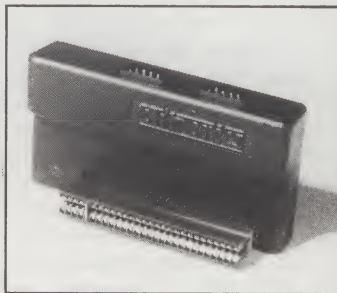
ed cables represents up, down, left, right and two fire buttons. To "program" the interface all you have to do is plug the appropriate cable onto the pins that represent the key you want to use. Whilst the interface is in use it doesn't disable the keyboard, so two players can play a game, one using the keyboard, the other the joystick.

There is a single joystick Port at the back, right hand corner. The interface also carries on the expansion port of the Spectrum, so you can plug in any other peripherals or even another interface for two independent joystick actions. A well made and high quality product, the Comcon interface should be compatible with any game that has a joystick option — and many of those that don't. The only products with which it is not entirely compatible with are the Quickshot 2 and Challenger joysticks, as each of these has an auto-fire function that the Comcon cannot cope with. However, the normal functions of these joysticks will work perfectly.

Order Code: SCOMCO

Dual Port Joystick Interface

Machine:
16/48K Spectrum, Spectrum +
Manufacturer:
DK'Tronics

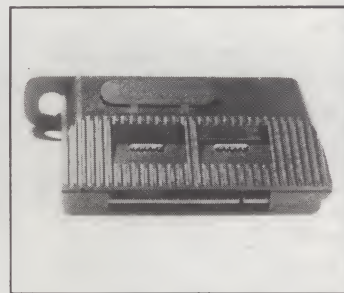


The interface has two ports; one is for use with Kempston-compatible games, the other for cursor controls, or software with a key-change option. This is the only interface compatible with a DK'Tronics keyboard as the port is set on top of the body rather than in front. A special feature is that the user can program the interface to enable two separate objects on the screen to be controlled independently by two joysticks. Two small programs in the instruction book make this quite simple.

Order Code: DKJIN

Turbo Interface

Machine:
16/48K Spectrum, Spectrum +
Manufacturer:
Ram Electronics

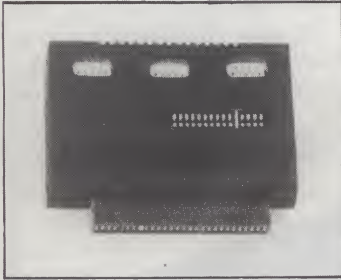


The 'Turbo' has two joystick ports and a ROM cartridge slot. The latter means instant game loading (though not many titles are currently available in this form), whilst the facility to use two joysticks is useful for two-player games. The unit supports multi-protocol software so that games which are Kempston, Interface 2 or Protek compatible will work automatically. The unit supports multi-protocol of other peripherals such as speech units, printer interfaces etc.

Order Code: TURBO

Pro Joystick Interface

Product Title:
Pro Joystick Interface
Manufacturer:
Kempston
Machines:
16/48K Spectrum, Spectrum +



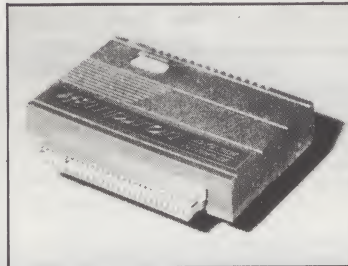
As mentioned before, there are other Protocols than Kempston, and this interface deals with them all. The interface has a black plastic case and measures 10 x 7 x 2 cm and is compatible with the Spectrum and the Spectrum +. When plugged into the back of the computer it lays flat. On the top of the interface there are three joystick ports and one cartridge port. The first port is compatible with the widely used Kempston joystick Protocol. The second port allows you to use software which has been designed for use with interfaces that

simulate the cursor keys. The third joystick port is for use with the Sinclair Protocol that occurs on some games and on all the cartridges. The cartridge port can take the instant loading ROM cartridges that are now being produced in minute numbers. The Pro Interface is a small, neat interface, that provides every available facility to the Spectrum joystick user, and ensures that every game can be played with a joystick.

Order Code: SPROIN

Kempston Interface

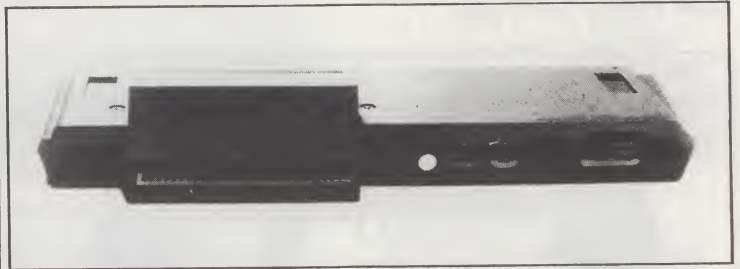
Product Title:
Kempston Joystick Interface
Manufacturer:
Kempston
Machines:
16/48K Spectrum, Spectrum +



A redesigned version of the original Spectrum interface, that is now compatible with

ZX Interface I

Machine:
16/48K Spectrum, Spectrum +
Manufacturer:
Sinclair



This interface is essential if you want to connect a microdrive to your Spectrum. Two additional functions are the ability to set up a local area network by establishing communication with other computers and it enables data and programs to be sent to peripherals — such as a printer — via the RS232 port (actually it's a 9-pin connection, so if you

want to connect to an RS232 port you need a special cable — full details in the manual). The Interface is easy to connect — only two screws have to be removed from the Spectrum then it just plugs in. The unit comes complete with a very comprehensive manual.

Order Code: INT1

both the Spectrum and the Spectrum +, and can be used behind a ZX Printer if required. The interface is 10cm long, 7cm wide and about 2cm deep and lies flat when it is connected to the Spectrum. There is one standard 9 pin joystick port in the top left hand corner

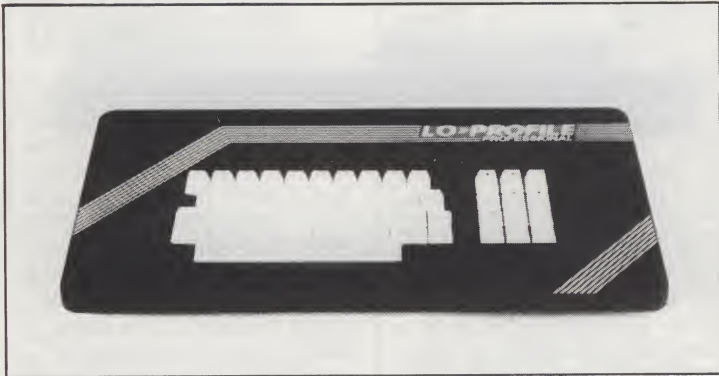
of the interface. This interface provides excellent value for money and the basic requirements for using a joystick. It uses the Kempston Protocol, so it should be compatible with all games.

Order Code: INTER

INTERFACE	Number of Joystick Ports	Expansion Port	Cartridge Slot	Works with Autofire Joystick	Kempston Protocol Compatible	Sinclair Protocol Compatible	Cursor Protocol Compatible	£		
								Recommended Retail Price	Club Price	Bonus Price
Kempston	1	×	×	✓	✓	×	×	9.95	9.45	
Kempston Pro	3	×	✓	✓	✓	✓	✓			
Ram Turbo	2	✓	✓	✓	✓	✓	✓	22.50	20.65	
DK Tronics Dual Port	2	×	×	✓	✓	✓	×	13.00	11.50	
DK Tronics Programmable	1	✓	×		✓ Programmable	✓	✓	22.95	19.95	
Comcon	1	✓	×	×	✓ Programmable	✓	✓	19.95	18.95	
Sinclair Interface 1	1	✓	✓	✓	✓	✓	✓	49.95	47.95	

KEYBOARDS

Low Profile Keyboard



Product Title:
Lo Profile Keyboard
Manufacturer:
Advanced Memory Systems
Machine:
16/48K Spectrum

One of the best looking keyboards for the Spectrum, the **Lo Profile**, is well designed and well made. It is also one of the largest, with a base measurement of 43 x 21 cm. The keyboard is gently sloped, the front only standing 3cm high, and the back 5cm.

Attractive, matt-black plastic with red details across two corners and along the top. The keys themselves, we must admit, are among the very best that we have seen on a keyboard, be it on a home computer or a replacement keyboard. On the main keyboard, the letters, number keys and space bar are all white. The enter, caps and symbol shifts and caps lock are beige. Next to the main keyboard there is a pad of eleven grey keys and one beige key. These consist of ten number keys (0-9), in grey, set out as on a calculator, for quick and accurate number entry. At the bottom left of the pad there is an additional beige 'caps shift' key, and at the bottom right corner there is a grey full stop/decimal point key.

The keys give a positive depression and are well spaced. They are ideally situated, since the casing below the keys makes a comfortable hand rest whilst typing. There is a 'caps lock' key — one that

does not exist on the original keyboard. The enter key has been extended and is easy to reach with your little finger, right hand. The keyboard comes with the legends already on the keys. The numbers and letters are in black, as are the keywords. The symbol shift functions are in red, and the extended shift in green. The colours are written across the top of the top row of keys, as on the Spectrum.

It is very easy to fit the keyboard to the Spectrum, in fact so easy that there is only a single sheet of instructions, although this is perfectly adequate. All that you have to do is remove the six keys around the base of the Lo Profile keyboard in order to separate it into two halves. You then have to do the same with the Spectrum, leaving its 'innards' on the base and discarding the top. Then you screw the Spectrum insides and base onto the base of the Lo Profile. At this point there is a new idea that is definitely worth mentioning. With most other keyboards there is a problem with compatibility with other add-ons that cannot fit the differently shaped keyboard. This problem has been overcome by letting the Spectrum stick out of the back of the keyboard, whilst the insides are covered with a piece of black plastic, moulded to the same shape as the 'ridge' along the back of the Spectrum. This ensures

that all Spectrum peripherals work with the keyboard. Next, clip two small ribbon connectors from the keyboard onto the inside of the Spectrum. The top of the keyboard is then screwed down. Absolutely no soldering is required. The fitting is very simple.

Overall, the Lo-Profile keyboard is very well made, and should last for a very long time. It turns your Spectrum into a real programming or business computer. To be highly recommended.

Order Code: LOWPRO

DK'Tronics Keyboard



Product Title:
DK'Tronics Keyboard
Manufacturer:
DK'Tronics
Machine:
16/48K Spectrum

The DK'Tronics keyboard was one of the first replacement keyboards made for the Spectrum, and subsequently it has been the best selling. The keyboard has a large casing, about 35cm long and 25cm wide. The front is 4cm high and it slopes up to 7cm at the back. The casing is made of black plastic.

The keyboard has two parts: the main set of letter and number keys, and then a separate pad of twelve red keys, set out like the number keys in a calculator-style pad. The keys of the main keyboard are grey, with a red enter key. There is a full size space bar. On the bottom row of the keys at the far left is a caps shift key, and on the far right of the bottom row there is a symbol shift key and a break/space key, just as on the actual Spectrum keyboard. On the number pad the symbol shift and caps shift are repeated. The keyboard is supplied blank with a sheet of legends that you must stick onto the keys yourself. The letters and keywords are in black, with the other symbols in the same colour as those on the Spectrum.

Fitting the Spectrum inside the keyboard isn't too difficult. You first have to take the plastic base off the DK keyboard. Next, completely remove the Spectrum insides from their casing. The circuit board is then screwed onto the base of the DK keyboard; then connect two ribbon cables from the top part of the DK keyboard onto the Spectrum circuit board. All that is fairly easy and more or less the standard procedure for fitting keyboards. It becomes somewhat more difficult when you want to fit the Spectrum Interface One and microdrives. To do this you have to take the Interface One from its case as well and connect it to the Spectrum, the whole assembly being kept inside the replacement keyboard. There is also a problem with fitting joystick interfaces, since the keyboard casing that surrounds the user port is shaped differently from that of the Spectrum and this means that some interfaces do not fit — for interface/keyboard compatibility refer to the table.

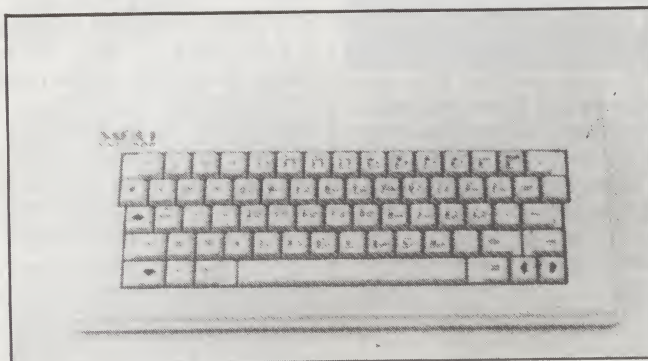
DK'Tronics offer a good, strong keyboard at a very reasonable price but its monopoly on the market is now being seriously challenged by newer, more attractive keyboards.

Order Code: DKK

Saga Emperor

Manufacturer:
Saga Systems Limited
Machines:
16/48K Spectrum
Category:
Keyboard

The Saga Emperor keyboard is all white. It has one main keyboard, with 67 keys — far more than normal. The keyboard is supplied blank, with two sets of legends that you have to stick onto the keys. The normal keys of the Spectrum are in the centre of the keyboard, surrounded by special function keys. The top row has 15 keys, starting with a 'RUN' key — just press it and enter to start a game, then 'LIST', 'LOAD' and 'SAVE' keys, which all do the same functions as when they are on the normal Spectrum keyboard, but are easier to use when on separate keys. Still on the top row, after the function keys, there are the normal number keys, 1-0, then at the very end a semi-colon key. The next row down has 16 keys,



which, from left to right, consist of '0', 'x' (as in multiply), 'Symbol Shift', '=', then the standard ten top row letter keys, followed by another 'Symbol Shift' key, and then a colon key. The third row down has 15 keys, starting with cursor up, then 'GRAPHICS', '=' and 'CLS'. Then there are the standard nine letter keys, with the Spectrum function words around the letters, followed by a comma key

and an enter key. On the fourth row down there are 14 keys, starting with 'DELETE', 'CAPS SHIFT', 'CAPS LOCK' and '\$'. Then there are the standard seven letter keys, followed by '.' (full stop or decimal point), 'Symbol Shift' and another 'ENTER' key. The bottom row has seven keys, starting with a cursor down key, then 'EDIT', 'SYMBOL SHIFT' and next a full size space bar. The last three keys are 'CAPS SHIFT' and

cursor left, cursor right keys.

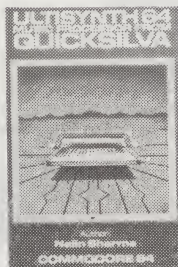
The keyboard is very slim, measuring 1cm high at the front, and sloping gradually up to 4cm at the back. Compared with the other replacement keyboards, the Saga is quite small, measuring 37cm long x 18cm wide. It is easy to fit the Spectrum, requiring only removing the Spectrum keyboard, and fitting the Spectrum circuit board and base inside the Saga keyboard, then plugging two ribbon connectors from the Saga into the Spectrum.

The Saga Emperor is one of the most attractive keyboards available, and is more like a real typewriter or professional computer keyboard in feel and keyboard layout. Its only drawback is the unprofessional system of having to stick the legends onto the keys, but in all other respects the Saga is a well made, professional keyboard.

MUSIC PROGRAMS

Ultisynth 64

Machine:
Commodore 64
Joystick:
No
Category:
Utility
Publisher:
Quicksilver



The Commodore 64 has the most advanced sound capability of any current home microcomputer. Its SID (Sound Interface Device) chip gives the 64, in theory at least, many of the features of commercially available synthesizers. But the programmer working in BASIC can only scratch the surface of the SID chip's enormous versatility, and — until the availability of 'Ultisynth' — you needed to be a combination of: hardware ex-

pert, machine code genius, sound engineer and musician — to persuade the Commodore 64 to 'perform'.

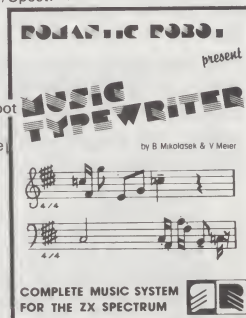
Ultisynth is a user-friendly toolkit which will allow you to control: sound envelope, waveform, pulsewidth, filter, synchronization, ring modulation, pitchblend, layering, glide and many other capabilities of the SID.

If you want to compose music, produce realistic explosions, make birdsong, imitate rain, thunder, flying saucers or simply produce the voice of a piano, violin, organ, guitar, harpsichord, woodwind or percussion instrument — then this is the product for you. With Ultisynth you will never again think of your 64 as 'just another home computer'!

Ratings:
Graphics: N/A
Sound: 10
Colour: N/A
Originality: 10
Interest: 10
Order Code: ULT64

Music Typewriter

Program:
Music Typewriter
Machine:
Spectrum 48K/Spect. +
Joystick:
n/a
Category:
Utility
Publisher:
Romantic Robot
Review:
Richard Peace



Music Typewriter is a utility enabling composition, and playback of pieces by the Spectrum. Given the Spectrum's limited sound capabilities this is a very good package but a musical novice will find it hard to get good results. Ideally it would be suited to a musician or a music student. The graphics of the notes are superb compared with other music programs on the market and bass and treble clef can be incorporated. Pieces are written by altering the length of the note and then pressing the appropriate pitch key. One

thing we found strange was the use of H to represent the note B on the keyboard overlay..

The overlay saves memorising loads of keys and forms a type of 'piano key' layout. Phrasing is also allowed within a piece, using staccato and legato. Tunes cannot be played directly on the Spectrum but playback is simultaneous with the display of the notes. Full use of rests can also be incorporated.

The operation of the program is user-friendly offering help pages and various menus for altering tempo and key signature etc. Colours can be selected for background and ink thus catering for individual preferences. A printout facility is available for most printers and allows for hard copies of your masterpieces!

Ratings:
Graphics: 9
Colour: own
Sound: beep
Originality: 8
Interest: 7
Order Code: SMT

BUSINESS PROGRAMS

Easyscript

Computer:
Commodore 64
System Required:
Commodore 64, Disk
Drive, Printer
Publisher:
Commodore
Review:
Andrew Goltz



Developed by Precision Software from their 'Superscript' program — for the Commodore PET — Easyscript is one of the best wordprocessors for the 64, combining the best facilities available on other popular wordprocessors and then adding some more! Of course all the usual facilities for editing, modifying, deleting and inserting words, lines and paragraphs are supported as is the facility for sending out 'individualised' standard letters to a number of recipients. Extra features include the ability to use the 40 column Commodore 64 screen as a "window" and scroll horizontally through a wide document, and a very useful facility which allows access to name and address data stored in **Superbase 64** files.

Order Code: EASSC-D

Easyspell

Computer:
Commodore 64
System Required:
Commodore 64, Disk
Drive, Printer
Publisher:
Commodore
Review:
Andrew Goltz



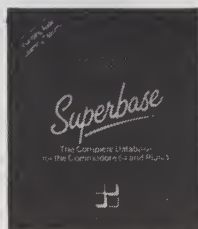
The spelling checker for **Easyscript**. Features a 32,000 word vocabulary, choice of English or American English spelling and the ability to add your own words. Unique word matching

facility prints lists of possible words if only a few letters are known. Essential for cheating at crosswords!

Order Code: EASSP-D

Superbase 64

Computer:
Commodore 64
System Required:
Commodore 64, Disk
Drive, Printer
Publisher:
Precision Software
Review:
Andrew Goltz



A very user-friendly and powerful database management system. Simple applications can be set up very easily for jobs such as mailing lists, membership records, indexing a library or a collection of valuable objects. Yet, **Superbase** can also be regarded as a programming environment in its own right, which adds 50 commands to those available from BASIC. The more experienced user will benefit from Superbase's facility to handle up to 15 files at a time, and will find the package an excellent tool to cut down the time needed to create "tailor made" applications for almost any purpose.

features:

- built-in help facility
- Max. no of records — limited only by disk size
- Max. no. of fields — 127
- Max. record size — 1,100 characters per record

Order Code: SUPER-D

Microsoft Multiplan

Computer:
Commodore 64
System Required:
Commodore 64, Disk
Drive, Printer
Publisher:
HesWare



Microsoft Multiplan is the most powerful electronic

spreadsheet available for microcomputers with the MS-DOS operating system, like the IBM PC and Sirius. Now, incredibly, it has been converted by HesWare to run on the 64 retaining all its essential features including: 225 rows by 63 columns, built in arithmetic, financial and trigonometric functions, 8 screen windows, alpha-numeric sorting, inter-worksheet working and flexible formatting. If you work with forecasts, mathematical models, budgets or other numeric data, this is the spreadsheet to get. See **Microswift** review for a full description of spread-sheets.

Order Code: MULTI-D

Mini-Office

Computers:
Commodore 64, Spectrum 48K/ +
Joystick:
No
Category:
Business
Publisher:
Database



This is a suite of four programs, originally developed as a low cost introduction to business software which, when finally completed, surpassed the company's original plan.

The package consists of a **Word Processor**, which is of the menu driven type and apart from the standard features of writing, editing and manipulating the text, it has some unusual options such as: Double Size Characters, an alternative Character Set and the facility to determine your own typing speed. Unfortunately, it only operates with a 32 column printer — such as the Alphacom 32. This rather limits its practical application, but this program still provides a stepping stone to more complex and/or more expensive programs.

A **Database**, which is capable of holding up to twelve fields of either Numeric or String information.

You can Search for a record in any field (Numeric or String), Amend, Delete and List it, replace any information stored in a field without having to go through all the records yourself and also Sort your records into Alphabetical or Numerical order.

A **Spreadsheet**, which allows you to select up to twenty columns and thirty rows, in which you can place numbers, labels and mathematical formulae, enabling you to keep track of and forecast your income and expenditure.

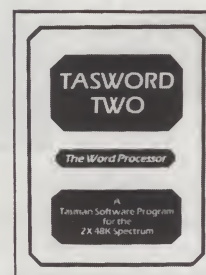
The **Graphics** program, which, used in conjunction with the Spreadsheet will produce either a Pie Chart, Graph, or a Histogram. Overall, the package offers excellent value for money, and while not powerful enough for small businesses, it will prove more than adequate for the general user.

Also supplied on the cassette are sample files for the Database and Spreadsheet programs. Even if you are new to these kind of programs, the cassette-sized thirty two page, step by step manual, will guide you with ease through them all.

Order Code: Spectrum: SMINOF
Commodore 64: CMINOF

Tasword Two

Computer:
Spectrum 48K/ +
Joystick:
Category:
Utility
Publisher:
Tasman



Tasword Two is a comprehensive word-processing package complete with full user-documentation and details of how to adapt the program to use different printers.

The package incorporates all the major facilities to be expected from a word-processor: — word-wrapping, justification,

find/replace etc. With the exception of the ENTER key one of the shift keys must be held down to perform a specific function, but 'help' pages are available so this is not a problem. The program is easy to operate and would be ideal for a home business or just for writing letters.

The screen display is neat, with 64 columns (80 on the C-64) and an information window at the bottom of the screen. The defined characters, therefore, are non-standard and can sometimes be difficult to read. On the Spectrum two display modes are offered, 32 column format and 64 column format. In the 32 column format the screen can be scrolled four ways to enable all the text to be read.

Our only criticism is that saving and loading of large text files onto tape takes rather a long time but this is more a fault of the computer than **Tasword Two**. Files can be 'merged' onto the end of a file already present in Tasword and paragraphs can be moved about within a text by the use of markers. The maximum length of a file is 320 lines but this is not at all restricting.

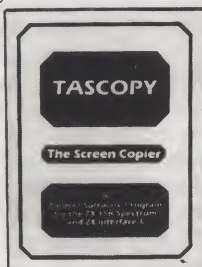
Order Code: Spectrum — STAS2
Commodore — CTAS2

Tascopy

Machine:
Spectrum 48K/Spect + with an eight pin dot matrix printer with Epson type control code sequences for bit image printing and line feed settings

Printers tested by Tasman:
Epson FX-80, RX-80, MX-80 type III
Shinwa CP-80
Mannesmann Tally MT80
Star DMP 510/515
Brother HR5

Category:
Utility
Publisher:
Tasman



Tascopy is a utility to produce printed screen copies when used with the equipment below:

Sinclair ZX Spectrum
Sinclair ZX Interface 1
Epson compatible dot matrix printer

The printer should be con-

nected to the RS232 socket of the Interface 1.

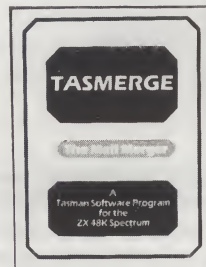
There are two programs on the cassette, one that produces monochrome screen copies printed horizontally across the paper in a choice of two sizes and another that produces large "grey-scale" screen copies printed vertically upon the paper. There is a small instruction booklet with the package detailing how to use the programs and how to use your particular printer. The program allows you to customise it if your printer is not in the list on the menu.

Order Code: STASCO

Tasmerge

System:
Spectrum 48K with one or more microdrives, Tasword Two by Tasman and Masterfile by Campbell Syst. (vers 9 or later)

Category:
Utility
Publisher:
Tasman



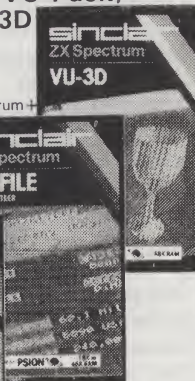
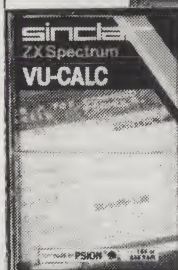
Tasmerge is a useful utility which allows data from Masterfile to be transferred to **Tasword Two**, providing such functions as letter headings, mail merging, multiple copies of standard letters with different names and addresses.

It also creates microdrive versions of Tasword Two and Masterfile if you have them on cassette. It should be noted that microdrives are necessary to run Tasmerge.

Order Code: STASME

VU-Pack — VU Pack, VU-File, VU-3D

Manufacturer:
Psion for Sinclair
Machines:
48K Spectrum, Spectrum +
Category:
Utilities
Reviewer:
Sam Knowles



Another bargain pack from Mr Software — is it Christmas already?! The VU-Pack is a set of three first rate utilities, one of which is yet to be surpassed — VU-3D — although it is almost three years old. VU-File may not be as powerful as say Masterfile from Capbell Systems, but it is nonetheless very useful. VU-File is a powerful, 60*60 spreadsheet. These three form a powerful suite of serious software.

1) VU-File: is a very professional piece of home micro software. It is a full, 60*60 spreadsheet, and is extremely flexible. The rows are lettered A to Z, AA to AZ, and BA to BH. The window shown on the screen at any one time is 4 columns by eighteen rows. A flashing bar represents the cursor, and is red in colour. You can enter both numerical and string data into any of the 3600 cells. String data is entered by typing " then the letters then enter. Numerical data is simply typed in. Any cell can be accessed by the Gxx command. 'XX' represents any cell — referred to by letter then number, eg A14. Cells are cleared by the B command.

Where VU-File really comes into its own is with the formulae which you can enter. Say row C represents income and row D represents expenditure. A formulae for profits — row E, say — can be worked out for column two by the formula C2-D2. The command will make the formula C3-D3 for column three — and so forth.

2) VU-File: is a fairly powerful mini-database. You can store both numerical and string data, once you have specified such for the different fields of each file. As with all VU-Pack programs, the ZX Printer is supported in VU-File so that you can keep a hard copy of your files. An address management system with name, address, age, telephone number and so on is remarkably simple to set up. Other commands

you would expect on a data-base are also implemented. You can alter any particular record, move forwards and backwards in your searches, delete any record, put the records in an alphabetical or numerically logical order. You can also search the file for a particular item in any field at all — particular telephone number or more general town name, for example.

3) VU-3D is an excellent three dimensional drawing program, as its name suggests. The sample file supplied is superb, showing a most intricate wine glass and a less intricate cube. The commands, listed at the top of the 'page' — as on all VU products — are self explanatory. Commands included are rotate, magnify, reduce and shade. This allows you to cast a light source from above or below and from right, left or centre. A hidden line feature also exists. With this you can remove all background lines to make the object look solid. It is fun to experiment with letters and words. Objects are very easy to construct and the cursors move very freely indeed. An excellent program from an excellent package.

Superb value; the originals, and largely still the best.

Order Code: VUPAC

Bargain Six Pack

Manufacturer:
Various for Sinclair

Machines:
48K Spectrum, Spectrum +

Category:
Utilities

Reviewer:
Sam Knowles



This Spectrum Six Pack for the 48K Spectrum is superb

value — check the price list. It costs, item for item, almost £70 in the shops. And Mr Software is offering it to you at a 75% reduction!

The pack includes some excellent utilities written for Sinclair by various leaders in the field. As you would expect, they are of the highest quality.

1-Forth: a version of the increasingly popular language which allows you to define your own words — commands — using existing ones. This version has many commands and words set aside for the unique Spectrum features. You have the speed of Z-80 op code with all the simplicity of a word-orientated language.

2-Beyond Basic: gives the user a deeper knowledge of the Spectrum's internal workings. The rudiments of op code are introduced as well.

3-Monitor/Disassembler: compliments Beyond Basic, though it is a program for the more advanced programmer. Mon and Disass are tools vital to ease machine-code programming. The disassembler turns bytes of memory into assembly language commands — thus you can investigate the Spectrum's ROM. The Monitor aids code entry and error debugging.

4-Print Utilities: gives you the chance to use those facilities Sinclair should have provided when they made the machine. We have here double height and double width characters — indeed there are four widths (16, 21, 32 and 42 characters/line) and two heights.

5-Music Master: allows construction of tunes, giving key signatures, note durations and scales. Modification of tunes is also permitted. Entry is achieved by copying from staves of music or by the 17 key note overlay.

6-Cattell IQ Test: finishes off the Six Pack. It is not at all easy. Do you deserve

that membership to MEN-SA? This is the program to tell you!

A great and inexpensive package.

Order Code: SIXPAC

(Limited stocks offered subject to availability.)

Micro-Swift

Machine:

Commodore 64 with Disk Drive (eg. 1541)

Product Title:

Micro-Swift

Manufacturer:

Audio-Genic

Review:

Bliss Healey



Micro-Swift from Audio-Genic is a real and very usable Spreadsheet program which is surprisingly similar to its 16-bit cousins such as Lotus 1-2-3.

In fact the similarity to Lotus 1-2-3 even extends to the 'Pop-Up' Menu system of control in which coloured menus of options appear in windows overlaid on top of the worksheet when you press a function key. Most of the features that a seasoned spreadsheet user would expect to find are there, including a horizontal or vertical split-screen facility and over twenty functions like @ASSIGN, @SUM, @IFGOTO, @MEAN to name but four. But for those of you who have not yet come across Spreadsheets at all, none of this will mean very much, so I will attempt to explain.

What is a spreadsheet?

The idea of a spreadsheet is essentially quite simple. Imagine a very large sheet of paper ruled into columns and rows. This gives you a grid of CELLS called a WORKSHEET.

Now above the top row of this grid there is a letter for each column, and down the left hand side there is a

number for each row. In this way, every cell in the worksheet can be referred to by a letter and a number, just like the squares in an A to Z map. The first cell is A1, the cell next to it B1, the first cell in the second row is A2, and so on. Each of these cells can contain one of three different things — text, numbers or formulae. As an example of TEXT, you might have the months of the year along the first row, and down the first column you might have various headings:

	A	B	C
1	jan	feb	mar
2			
3	Income		
4	Expenses		
5	Savings		
6			
7	Balance		
8			
9			
10			

You could then enter various NUMBERS, corresponding to your income, expenses and savings for each month. The BALANCE row, which tells you how much is left over, can be calculated by a FORMULAE specifying Income-(Expenses + Savings).

One of the convenient things about a spreadsheet is that although each cell in a row like that for balance in fact has a separate formula — +B3-(B4+B5) for January, +C3-(C4+C5) for February, and so on — you only have to enter the first of these formulae and then COPY it along the row using a built in function. The spreadsheet program will alter the cell references for you automatically by a process known as REPLICATION.

Further formulae could be added to work out the yearly totals and monthly averages. The formula for the total income would be @SUM (B3, L4) since January's income is to be stored in the cell B3 and December's income in L3. Similarly, the formula for the average expenses per month would be @MEAN (B4, L4).

Once the formulae have

been set up in this way, you can enter the monthly amounts and the spreadsheet will calculate the values of all cells containing formulae.

This is the key to how a spreadsheet is used for WHAT-IF questions. You can find out what your yearly balance would be if your expenses were a certain amount less by replacing values in the expenses row and watching the effect that this has on the cell we assigned for total balance.

In a more detailed budget worksheet you would break down expenses into various categories such as travel, electricity, beer (!) and so on, and so the WHAT-IF projections could also be more complex. You could ask questions like 'How much extra could I afford to spend on my beer consumption if I decreased my travel expenses by 10% by buying a Bus Pass?'

Spreadsheets are therefore very flexible planning tools which are as much use for controlling a home budget as they are for planning a large company's cash-flow.

Ease Of Use

Most spreadsheet programs available for home micros are either 'toy' Spreadsheets of use only as introductions to the real thing, or else they are fiendishly difficult to use.

Micro-Swift combines power with ease of use in a way that is a tribute to the skill of the programmer, Dave Middleton.

Most choices are made by using just three keys, the function keys f3, f5 and f7. Press f5 (called the GO key) and the main Command Menu appears. You can then move up and down the options in the menu with f3 for up and f7 for down. When the choice you want is highlighted you press f5 to accept that option.

Most of the options on this main menu result in further sub-menus 'popping up' superimposed on the sheet. You then repeat the process using the same three function keys until you arrive at the choice you wanted — nothing could be easier!

What You Get

The first option on the Command Menu is Go To Cell, a facility which enables you to move the cursor directly to any of the cells in the 26 X 25 sheet according to its reference (e.g. N25).

Next you have the Range Commands choice which provides another menu of options applying to a whole range of cells.

A range can be parts of a row or a column, e.g. A2, K2 or C1, C200, or else a block of cells such as C3, G10. The options on the Range Commands menu then allow you to carry out some operation on the range you specify — Copying the range to another part of the sheet, Erasing a range, Sorting it, Printing it, Saving or Loading it or changing the format of the cells in the range.

The third option, Worksheet Commands, gives you a choice of commands that affect the worksheet itself as a whole. You can globally format all of the cells in the sheet, set all of the column widths, delete or insert rows or columns, save or load the sheet, set-up printer specifications, clear the whole sheet and even change the colours of the menus!

Another option on this menu is called Formulae or Value. This allows you to switch between displaying the values for each cell on the worksheet (both entered and calculated) and displaying the formulae in those cells which have formulae entered into them. This is useful if you get unexpected results and want to check at a glance which figures have been calculated and by which formulas.

Formatting a cell with the next option on the Command Menu gives you control via another sub-menu over such details as the display of negative values, currency signs, commas after thousands, degrees of precision and so on. There is also a Plot option which converts numbers into rows of '*' signs so that you can plot simple bar-graphs. The Column Width option

allows you to alter the width of the current column using the cursor keys to stretch or shrink the column. This is another feature usually found only on expensive 16-bit spreadsheets like Lotus 1-2-3 or Framework which run on the IBM PC.

Split-Screen

Another facility rare on spreadsheets for home micros, but part of the original spreadsheet, **Visicalc**, is the next Command Menu option, the Split Screen facility. The worksheet can be split into separate 'windows', either horizontally (along a row) or vertically (down a column). You can then tell Micro Swift whether you want both windows to scroll together or one to stay static while the other is scrolling. An obvious use of this facility is to retain column headings on the screen while the rest of the worksheet scrolls up and down. Another is to compare two remote parts of the sheet on the screen together. You can then jump from one window to the other by means of a 'Swap Over' option. The next choice available is the Recalculation option. Recalculation is what the spreadsheet does to keep the sheet consistent whenever the value of a cell is changed. This can be set to Manual or Automatic mode, by column or by row, and can even be set to a special Programmed mode. This brings us to an enormously powerful and flexible aspect of Micro-Swift, its programmability.

Programmability

Again you have a feature normally confined to spreadsheets ten times the cost of Micro-Swift, the ability to set up in the last column (column Z) a series of actions which can be given a name and made to run through the Recalculate Menu. If Programmed recalculation has been selected, all you have to do is to press the f2 function key and a menu of the programs that you

have created appears for you to choose from. In this way a complex worksheet can be made very simple to use since even the entry of values into cells can be carried out from the command line at the top of the screen.

Finally there is a Disk Command Menu for validating or formatting a disk and for deleting individual disk files. Micro-Swift comes on disk with a very comprehensible Instruction Manual and usefully includes four worksheet templates already laid out for you to enter your own figures. These are Home Budget, Car Costs, Loan Analyzer and Expenses; enough on their own to justify the purchase, these ready-made worksheets mean that you

will be finding Micro-Swift useful to you almost as soon as you have taken it out of its box.

Conclusion

Micro-Swift is a truly outstanding product offering you many of the features of a spreadsheet program written for professional business computers. The price is almost unbelievably low for what you get, and I can wholeheartedly recommend any 64 owner to buy it. If you have a small business, want to control your finances with a home-budget or simply want to get to grips with spreadsheet technology then this is for you!

Superscript

Computer:
Commodore 64 with disk drive
Publisher:
Precision Software Limited
Review:
Tony Toller
Price:
£69.95

We have already reviewed **Easy Script** and **Easy Spell** earlier in this section. If you have a little extra money to spend or if you want to do serious word processing on the Commodore 64 then the higher outlay on **Superscript 64** is well worth it.

As a user of **Wordstar** (which costs about five times as much, incidentally) the office staff were immediately impressed by the facilities available on **Superscript 64**. As well as the word processing and mail merge features which are pretty standard now on such software, **Superscript** has its own built in spelling checker and you can do calculations as well!

On loading the program the user is presented with a menu containing four options; these cover the creation of a dictionary/training disk, and the creation or use of existing work disks. The former of these allows the user to select whether he requires UK or US spelling checking. Initially, it makes sense to operate **Superscript 64** in the menu mode. This gives you a line of options along the bottom of the screen which scans

like a "duck shoot" at a fair and you simply stop on the required option. The commands selected have a brief explanation on a line immediately below the duck shoot. Once you gain experience with the system you can by-pass the menu with single key commands (which can be quickly learnt with the aid of a help screen accessed by pressing function 8). You can also create your own command strings and this is one of the main features of **Superscript**. Frequently used sections of text, addresses etc can be stored on your work disk and called up at a single key stroke.

Users of **Easyscript** will know of the disadvantage of trying to read text on the screen where the words on the right hand side are chopped in half quite randomly or on other processors where the whole text moves left to right in a scrolling window fashion. **Superscript** avoids this by wrapping words on to the next line making a neat and very readable display.

Precision Software have gone to a lot of trouble to ensure thorough documentation for the user with excellent tutorials on the use of **Superscript** and an extensive section on printers — which often tend to be a bug-bear when setting up such software for the first time.

ART PROGRAMS

Leonardo

Machine:
Spectrum 48K +
Joystick:
Kempston
Cursor
Sinclair
Category:
Utility
Publisher:
Creative Sparks
Review:
Neil Atkinson



Throw away your light pens — Leonardo offers a much better, cheaper way to create graphics. As Creative Sparks say "Leonardo is a graphics utility which offers the user a huge range of facilities, in fact the only limit is your imagination" and we couldn't agree more. The package comes complete with a well written, easy to understand instruction manual that takes one hundred pages to detail the program's facilities and applications, so we will just highlight a few and from these you will be able to see just how powerful this program is.

The best feature, in our view, is that you can use the joystick to guide the cursor around the screen. Sounds simple? It is but we think that this is the first time it has been exploited. We found it far easier to use than any of the Spectrum light pens, as it can be used in conjunction with the keyboard to create fantastic graphics. By moving the joystick the cursor on the screen moves in the appropriate direction. Whether it leaves a line or not is governed by the "fire" button. In the top left hand corner of the screen is a small box that, as well as showing the cursor position in rows and columns, indicates "cursor" or "plot". When it displays cursor no line is left. Press the fire button on the joystick and the display will change to "plot" and now the cursor will leave a line — it's that simple. Another feature that impressed us was the fineness of the line that was drawn — curves too were very smooth. Freehand drawing is far, far easier with "Leonardo" than with any of its rivals — software or hardware.

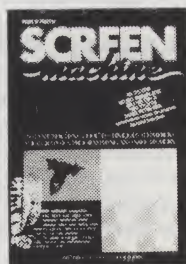
Basic control of the program is divided into two parts: **Joystick** — which as explained moves the cursor and **keyboard** that controls what is actually drawn. Nearly every key on the keyboard has a function (most have two) that is activated when the key is pressed. The functions may happen straight away, like "clear screen" for instance, or they may need some additional information. When this happens the bottom third of the graphics window is taken up by the settings, and once you have changed the characteristic you want to, the full screen reappears. The keys are used to control facilities such as the drawing of arcs, circles, filling in around or inside shapes, scrolling or magnifying. Screens can be dumped to a ZX Printer or saved on tape. Graphics created using "Leonardo" can be incorporated in your own programs.

"Leonardo" is simply the most advanced Spectrum graphics package and we would strongly recommend it.

Order Code: SLEONA

Screen Machine

Product Title:
Screen Machine
Manufacturer:
Print and Plotter
Products
Machines:
16/48K Spectrum,
Spectrum +
Review:
Sam Knowles
Order Code:
SSCRMA



This microdrive compatible utility is a complimentary program to Print and Plotter's **Paint Plus** but is nowhere near so glamorous a package. This said, it is an extremely useful suite of programs, all dedicated to picture and text manipulation. The cassette comes in an Ultimate-sized box with a one hundred page 'Picture Book', the first half of which is dedicated to Paint Plus. The screens featured in the book are the fruits of many, many hours of tiring toil on **Paint Plus**. The paperback manual hopes it can imbue you with the skill

to produce the same.

i) Screen Machine One

When I first loaded this program I was non-plussed. A bleak menu stared me in the face. The only available options are: cat, store, load and save. I could have written this program, I thought to myself. There is, of course, much more to it than at first meets the eye. After a dive for the manual, I was somewhat happier. What SM1 does is compress the amount of memory used by screens of graphics and text. As a result, more than the usual maximum quota of five or so screens can be stored in memory. Blank areas are replaced by flags in the computer's memory. Monochrome storage saves even more space. A whole screen can take up as little as 2K after compression — this is a miraculous saving compared to the 6912 bytes normally needed. SM1 can also compress any third of the screen. Compressed screens and parts of screens are easy to access from your own programs — adventures, most probably. A few pokes and 'decompression' is achieved. Tables of data displayed are very useful and simple to comprehend. It took me little time to master this program.

ii) Screen Machine Two

This is altogether more fun and its usefulness is more immediately clear. The program serves as a screen processor, although editor would be more adequate description. There are ten commands available, represented along the bottom of the screen by corresponding letters. These commands allow you to Store and Call various images, Blend some with others, Enlarge and Reduce parts of the screen, Flip the whole image to its mirror image — and back again — change the Ink and paper colours and scroll in various directions using the cursor keys, 5, 6, 7 and 8. Combining these two programs makes it possible to achieve what P'n'P term "Flip-screen animation." I never actually got as far as drawing twelve horses in slightly

differing poses, but the effect of such an exercise is electric, as we notice from the most impressive demonstration screens. SM2 allows you to produce interesting collections of the same picture in any areas of the screen. However, as with SM1, you tend to loose more and more definition the more you enlarge and reduce.

iii) String Machine

I found this program the least satisfactory of the suite of three. It is supposed to make printing on screen infinitely more easy than warping letters with udg's and so on. The only obvious benefit is the speed of printing a couple of screens — precompressed by SM1 if you like! — of text very quickly indeed. I was unable to make the program print in any axis other than the horizontal. A most unsatisfactory program and one which seems to serve no real purpose. The selection of programs is to be recommended to anyone who already has his software library any screen-drawing program — such as P'n'P's own Paint Plus. Otherwise, it is going to take too many hours of blood and sweat — certainly to justify the price.

The Artist

Machine:
ZX Spectrum 48K, +
Joystick:
Kempston
Category:
Utility
Publisher:
SoftTechnics
Order Code:
STHEAR



Hot on the heels of the excellent **Leonardo** comes another drawing program called, rather more modestly, **The Artist**, but which offers serious competition to **Leonardo**.

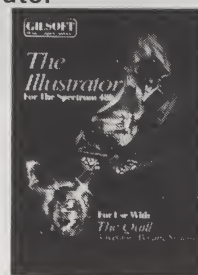
Once the program has loaded, you will be presented with the 'work screen'. This is essentially your sheet of blank paper, with a small menu running along the bottom of the screen. In the centre of the screen there is a small cursor, that you can guide with either the keyboard or the joystick. When using the keyboard by holding down

the 'C' key a line will be drawn wherever the cursor goes. Similarly holding the 'X' key will erase anything that passes under the cursor. When using the joystick, holding down the fire button will turn the "line" on or off, or turn the "eraser" on or off, depending on which function has last been selected. The cursor is very easy to control, either by keyboard or joystick, and drawing of freehand arcs and curves is relatively simple, and easier than with a lightpen. One of the major differences between "The Artist" and "Leonardo" is the wider use of menus throughout "The Artist". As mentioned, the first menu is at the bottom of the work screen, and consists of the numbers 1-8, with a function under each number. Under 1 there is the word 'BRUSH', and if you press '1' the main menu will disappear and be replaced by the numbers 1-0, running horizontally across the bottom of the screen, in place of the menu. Under each number are various sizes of 'brush width'. This is simply the width of line that the cursor will leave. The program starts at 1, which is the narrowest and leaves a very fine line, and pressing 2-8 will make the line progressively thicker. Pressing 9 will give a variable width line, like an italic nib, and pressing 0 replaces the solid line left by the brush (cursor) with an 'Air Brush' effect, that enables you to produce varying densities of shading. Once you have chosen a brush width the screen will immediately change back to the main menu and work screen. Under '2' on the main menu are the words 'BRUSH PATTERN', and when you choose this option, you will once again be presented with another menu, with the numbers 0-9. This time however, under each number there is a different pattern that you can choose to draw with, including checks, lines etc. Pressing option 3 on the main menu presents you with another menu. This time you are in 'TEXT' mode and are able to use

the keys as in normal use. You can 'INVERT' letters, switch the 'OVER' mode on and off, use the built in small character set, or use one of the eight redefinable character sets. By pressing '4' you can view the whole work area, especially useful if you want to use the entire Spectrum screen area. The move function, operated by pressing '5' has a similar result, except, instead of removing the menu, it moves the whole screen up three lines so that you can use the area below the menu. Pressing '6' operates the 'CLS', function that simply clears the screen. The storage functions are accessed by pressing '7'. You can easily dump screens to a ZX Printer, load, save and search for screens. Option 8 is labelled 'CHR' and in this function you can create up to seven new character sets. A second main menu is accessed by pressing symbol shift. With this menu you can create circles, squares, lines and arcs. There is an amazing feature called 'ENLARGE' which works by pressing '5'. In this mode, an area of screen that surrounds the current cursor position is enlarged so that you can work on smaller details. This menu also gives you access to the 'OVERLAY' command, that really sets **The Artist** apart from other drawing programs. This function is described best by SofTechnics who compare the 'OVERLAY' mode to as putting a piece of plastic over the graphics that you have drawn. Then you are able to 'cut and paste' parts of the screen — ie. you can cut out one part of the screen and move it to an entirely different location. You can also expand the piece that you have "cut out", either length or cross ways. The third menu can be reached by pressing 'symbol shift' again, and this deals with the colour, permitting you to change the border, paper and ink colour by just a few button presses. Overall, **The Artist** has exceeded even **Leonardo** in both features and ease of use, and we strongly recommend it.

The Illustrator

Machine: Spectrum 48K / +
Joystick: n/a
Category: Utility
Publisher: Gilsoft
Review: Richard Peace
Order Code: SILLUS



It should be stated, before actually reviewing this product, that it is necessary to have a copy of **The Quill** in order to use this utility from Gilsoft. For a review of the Quill see this supplement. The **Illustrator** is a complementary program which allows graphic illustrations to be added to text adventures written with the Quill.

Features

After writing your adventure on the Quill, and after saving the database containing all the information, it is time to load the **Illustrator**. Then part of the database is loaded into the main program, detailing the number of locations and the first free memory location. This allows the main program to set up a graphic database sufficient for your adventure. The main menu is smaller than that of the Quill containing all the loading and saving operations and the graphic option. On selecting the graphic option a sub-menu is displayed. This allows a picture to be displayed, drawn from scratch, and edited.

Drawing

Most drawing is by using lines, although a freehand feature is incorporated which uses up a lot of memory. Two cursors are displayed on the screen, the rubber cursor (RC) and the base cursor (BC). The RC can be moved using the keys Q, W, E, A, D, Z, X and C for directions. On pressing L a line is drawn between the BC and the RC. The BC can be moved to the RC by pressing M. This allows fairly complex drawings to be displayed but these are only line drawings. The program also allows colouring, but watch out for attribute problems, filling and an excellent shading feature. Upon pressing T, you are pro-

mpted for a number between 0 and 225. This then generates a particular shading pattern between lines drawn on the screen and the effect can be quite stunning. The pictures drawn with the **Illustrator** take up a whole screen and upon pressing a key the location description is displayed. Different INK, PAPER, OVER, INVERSE, BRIGHT and FLASH values can also be entered. A subroutine function allows an object that occurs more than once to be called up when needed. Designed in a separate screen the subroutine object can then be scaled down or up to suit a particular location.

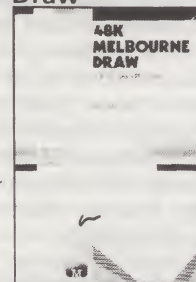
Comment

The **Illustrator** is a valuable utility for anyone who owns the Quill and for those of you who are thinking of buying the Quill provides an extra outlet for creative talent. Graphical adventures are more marketable than text only ones and of course using the Quill enables you to sell your successful work (see the Quill review).

Ratings:
Graphical Ability: 9 Colouring Ability: 9
Originality: 10 Sound: n/a

Melbourne Draw

Machine: 48K
Joystick: No
Category: Utility
Publisher: Melbourne House



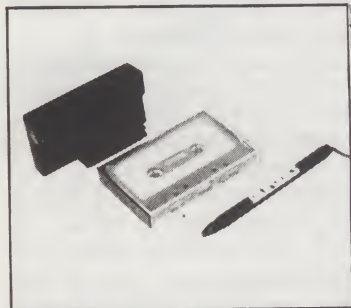
Melbourne Draw allows you to create stunning graphics effects, without having to use difficult programming techniques. You can create any illustration or picture you want, quickly and easily. This program enables you to add graphic screens to your own programs. It has many features including: reduce or enlarge images to any size, create individual lettering and insert it anywhere on the screen, save graphics on cassette. Three sample pictures are included and can be experimented with.

Ratings:
Graphics: 10 Ease of use: 10
Sound: n/a Interest: 10
Colour: 10 Order Code: MELDR

GENERAL HARDWARE

DK'Tronics
Light Pen

Product Title:
Light Pen
Manufacturer:
DK'Tronics
Computer:
16/48K Spectrum, Spectrum +



The DK'Tronics light pen package consists of four items — an interface, an instruction manual, a cassette of programs and the pen itself, connected to a 90cm lead. The interface plugs into the user port on the Spectrum and into this is plugged the pen. The software provided comes in both 16 and 48K versions. What does a light pen do?

Well, in theory at least, use of one with the appropriate software should give the ability to draw pictures and diagrams on your TV or monitor by guiding the pen over the screen. You should also be able to choose items from menus by placing the pen over the required option.

So much for the optimistic theory behind the operation of a light pen — now for the reality.

The DK'Tronics pen comes with a program with several routines which allow you to create pictures, graphs, or sketches. In total there are sixteen of these routines.

Once you have loaded the program they are represented by a row of sixteen boxes along the bottom of the screen, each with a letter above. This constitutes the menu. To choose a function you point the light pen at the box or letter and press the key, corresponding to the function, on the keyboard.

There are also a set of axes on screen which can be moved around, and another cursor 'x'.

The functions available are: draw a line, circle, rectangle or arc, insert text onto the screen, erase, fill a shape, change the border, ink or paper colour, save and recall screens and free-hand drawing.

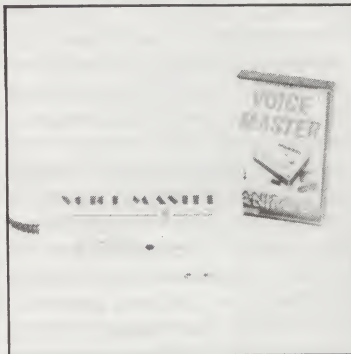
Reviewer's Comment:

There are really two types of operation. The first is with the set functions. With these you use the pen to set the size of shape and then select the correct function. The other operation which I thought should have been the most useful is the free-hand draw. Unfortunately, the reality of this function soon casts away any visions of merrily drawing over the screen. Instead, when you choose this option, there are flashing lines all over the screen as the axes follow the point of the light pen. I also found it very hard even to draw a straight line, and curves turned out to have points to them! Furthermore, as a result of the extreme sensitivity of the pen, a line is drawn whilst you move it away from the screen. You have to keep turning the free-hand option on and off when in use. I think that very strong competition indeed is offered to the DK'Tronics light pen by the excellent graphics utility programs, such as the joystick controlled 'Leonardo' (Creative Sparks) and the keyboard controlled 'The Artist' (Softtechnics). These yield just as easy cursor control, and also different pen widths, patterns and so forth. Both these utilities, which are software only, are reviewed in the "Art Programs" section of this supplement.

Order Code: LIGPE

Voice Master

Machine:
Commodore 64
Manufacturer:
Anirog



Wow! What a job it was trying to get a review of Voice Master....after two sets of tapes, we had still only managed to see the demonstration program, as the others wouldn't load. However, as we have experienced some trouble with our computer recently it is more likely that we are at fault. Because we haven't seen the other programs we will give you the same details as given by Anirog.

The one program that we did manage to see was the "DEMO" — quite fortunate really, as this shows off the Voice Master's talents very well. Before describing the demo, you should know what hardware comes in the package. The main part of the Voice Master is a small, silver box, that plugs into joystick Port 2. Into this box you plug in a headphone with a microphone arm on it so that the microphone rests about an inch away from your lips. You also get two tapes with utility programs on them.

Once the demo program has loaded, and you have connected up the box and headset, you can prepare to be amazed....firstly put on the headphones, then follow the on-screen instructions — press 'f1' to record speech. So you press 'f1', "Start Talking" comes up on the screen and you say "HELLO" into the microphone. Then press 'f3' and the computer comes right back at you

with a synthesized "Hello".

Once you have got over the shock of a computer with your voice, you can begin to experiment...pressing 'f5' puts an echo on your voice, and you can speed up or slow down the voice. And you don't just have to speak single words as the program can handle whole sentences.

Other programs on the tapes or disk are basically concerned with the Voice Master's ability to speak and to recognise words and sentences. Using the four extra basic commands — learn, train, recognise and speak — that are supplied in the programs, you can easily include speech in your own basic or machine-code programs. You can train your computer to accept verbal commands.

With one program, called "The Voice Harp" you can simply sing, hum or whistle and the octave and note values will be displayed on screen. For the more musically inclined Voice Harp Composer is a program that scrolls notes across the screen as you hum or whistle. Then a sophisticated editor allows you to scroll back and forth, deleting or inserting notes and rests.

Interface III

Manufacturer:
Draysoft
Distributor:
Evesham Micro Centre
Machines:
48K Spectrum, Spectrum +
Category:
Hardware/Software Tape-to-Microdrive Copier
Reviewer:
Sam Knowles



We now enter the dubious world of software copying — from tape to Microdrive.

The cassette says 'For Personal Use Only' in bold letters. Hmm. Well, anyway, the advertisements proclaim that the box and its accompanying program can copy any piece of Spectrum software. Since its own release, "Jonah Barrington's Squash" has come out.

This has proved exceptionally difficult to 'make back-up copies' of; a computer-printed sheet accompanies Interface III telling you how to do that too! When we unpacked our small cardboard box, we found four items; the box of tricks itself, a cassette, a sheet of information on how to use the product and the info on how to copy "Squash". The box is rather feeble-looking with a weak-looking connector which slots onto the Spectrum expansion port. The box is black and measures 11cm long by 7½cm high by 3cm deep. A red button sits on the right hand side.

Feeble it may seem, but it is in fact fairly strong.

It is very easy indeed to enter the box — you only have to unscrew two positive screws. Inside, there are seven chips soldered to the PCB, and one sitting atop a blue socket; dotted around are two capacitors, nine resistors and a transistor — not too much to go wrong there!! The chips are made by different companies — Texas Instruments, Hitachi and NEC to identify but three. The soldering job is good — if not too good. I was worried in case such secure soldering should lead to joining of the circuit lines. Now that would be fatal. Once I slotted the interface home, it was wobbly but secure. To test it, I shook it up and down with power on. No crashes there.

IN USE: the interface III is a bit of a bind. There is constant chopping and changing. The procedure is thus. Fit I/F III, power up and load the program you want to copy. When the

program is running, select a point in the procedures where there is no action — a high score table or page of information, for example.

Hit the red button and prepare a tape in your cassette recorder. Start the tape and press any key.

This saved — in an odd format — you unplug the power and the interface too. Next, you must load the program supplied, called Autotrans on the cassette label, TRANS-BASIC in actuality. You are asked if you want to save the TRANSBASIC routines to Microdrive — I advise this for saving time in the future. Then you load the program you saved with I/F III back into the Spectrum. Soon, you actually get the chance to save the program to tape. This can have taken up to ½ an hour. In any case, the saving does not always work first time!

Reviewer's Comment:

I found that Interface III was most tedious to use.

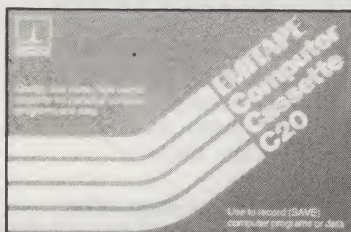
There was far too much loading, saving, resetting, unplugging, loading and so on. In any case, the interface is not 100% effective.

The price — £40 — will be prohibitive to the casual pirate. I'm sure the more serious one will have his own systems. Not really to be recommended.

CONSTRUCTION: 60% — looks very plastic, but seems to be OK.
SUCCESS: 70% — not too bad as a back-up system. Keep many nights free, however!
VALUE: 35% — poor. To the person who would want to make back-up copies and back-up copies only, the price is likely to be prohibitive. To the pirate, it will be a pittance or too slow to bother about. No good for mass copying, really.

Blank Cassette Tape

Machine:
Any
Manufacturer:
Various

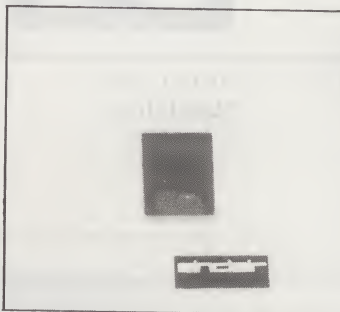


Standard C-15 cassette, suitable for recording programs or audio material. Plays for 7½ minutes each side.

Order Code: EMI120

ZX Microdrive Cartridge

Machine:
16/48K Spectrum, Spectrum + ; QL
Manufacturer:
Sinclair



Similar, in appearance, to a miniature cassette tape, the cartridge contains a continuous loop of special quality magnetic tape and is slotted into your Microdrive. Each cartridge holds up to 100k bytes but on average 85 to 90k. Files are automatically catalogued on the cartridge — entering the CATologue statement (CAT followed by the microdrive number) will display on the TV screen the cartridge name, file names and amount of memory left. Following a recent 60% drop in price, Sinclair now sell the cartridges in "bargain four-packs" too.

Order Code: MICCA

Floppy Disks

Machine:
Any with 5¼" disk-drive
Manufacturer:
Various
Specification:
Single Sided/Double Density



Suitable for use with the 1541 Disk Drive, these disks are Single Sided, Double

Density, with 80 tracks. They come fitted with a reinforcing hub ring — an important feature for long disk life.

Order Code: DISKS or DISCS 10

ZX Microdrive

Machine:
16/48K Spectrum, Spectrum +
Manufacturer:



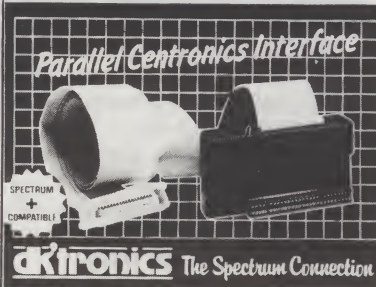
The microdrive gives you fast access to an inexpensive backing store. Each Microdrive can hold up to 100 bytes per cartridge and cartridges can be slotted in or removed at will. Full instructions on using the Microdrive come with Interface 1 — which is an essential item. You can only connect the Microdrive to your Spectrum via the Interface, though up to eight microdrives can be connected through one interface.

Don't expect to copy much commercial software, i.e. games, onto your Microdrive. Most manufacturers build in facilities to inhibit such copying though some will convert the product if you send them the tape and a cartridge. Check with the manufacturer first though!

Order Code: MICDR

Parallel Centronics Interface

Machine:
16/48K Spectrum
Manufacturer:
DK'Tronics



The interface will link your

GENERAL HARDWARE

ZX Spectrum to any printer with a 'Centronics' port. It allows high resolution screen dumps and all the ZX printing commands are recognised. It is fully Microdrive compatible and interfaces with any software using the printer channel, i.e. Tasword, Dev Pack etc.

The interface comes with full instructions, ribbon connector and controlling software on cassette.

Order Code: DKPCI

Currah Speech

Machine:
Commodore 64, Spectrum 48K / +
Manufacturer:
DK'Tronics



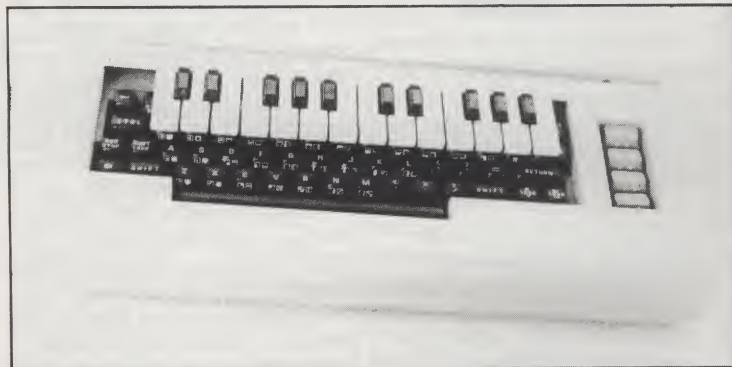
If you really want to bring your Spectrum or Commodore to life, then this is the accessory to do it. Integral ROM based software means that as soon as you connect up and start typing the television starts talking! Yes, type the speech string "Hello", hit the enter key and the voice comes straight back at you. The Currah is an allophone speech synthesizer, using individual sounds strung together to build up intelligible speech. This is dif-

ferent to some speech synthesizers which have a fixed vocabulary. The Currah can synthesize *any* word in the English or any other language! An invaluable aid to programmers who haven't time to look at the screen but who will soon hear if they hit the wrong key. (The voice can be disabled if required.) The unit comes with a free game and demonstration cassette.

Order Code: Spectrum: CURSP
Commodore 64: CUR64

Commodore Music Maker Keyboard

Title:
Commodore Music Maker
Computer:
Commodore 64
Review:
'Chip' Monk



The **Commodore Music Maker** is one of a variety of music programs for the Commodore 64. The difference with this one is that instead of using the actual '64 keyboard the Music Maker allows you to overlay an imitation keyboard which adds a little authenticity to the program. While the program is loading it plays the tune *When I'm 64*. This is an example of the type of sound that you are able to get out of the program — not all that great! But, having said that, there are 8 voices that can be used and you are able to create your own ones. The manual included in the package gives examples of some of the instruments that can be programmed to play, and include piano, saxophone, steel drums and the clarinet. There are eight options from which you can choose different bass settings, which background music you wish to have playing, practice your playing, redesign the voice, sequence a piece of music,

record the voice and sequence, change the octave in which you play, and the voice you wish to play. The bass setting really speaks for itself, as does the choice of voice setting. There are three background settings each of which have three different settings according to the bass choice. Unfortunately the background cannot be played during poly play (the practice of your own music). Poly play enables you to play normally but a three key note can be played. The option to sequence your own bit of musical mastery is very helpful and enables you to program in notes and then program at which speed you want them played at. Now, the fun part of this program is the chance to use your own musical ear and mental combination of different aspects that go into making a musical instrument. "What on Earth is he talking about" I hear you yell, well in a nutshell, I'm describing the chance

to make up your own musical instrument. The technicalities that are involved in this program are as follows:-

Voice No. This just allows you to put the instrument into the computer memory and enables you to recall it at any time.

Attack. Allows you to program the hardness at which the note is first played, i.e. for a cello you would have a low value.

Decay. This tells the computer how quickly the note will die away, i.e. a saxophone will have a low value.

Sustain. This command allows you to set a volume at which the note is played while that key is being depressed.

Release. The time in which the note fades away after the key has been released.

Waveform. There are four waveforms from which you can choose. They are sawtooth, (mostly used for brass instruments), triangle, (used for smooth relaxing sounds such as flutes), pulse, (ideal for clarinet or other woodwind sounds) and noise — which is described as 'escaping steam'.

Pulse width. When waveform 3 is chosen, pulse, you can change the rate at which it repeats: the higher the percentage, the mellower the tone.

Filter. Filter allows you to pick three types of sound you wish to produce. Lowpass reduces the treble, bandpass reduces treble and bass, highpass reduces the bass. Alternatively you can turn the filter off completely.

Cut off frequency. This command will enable you to

turn off frequencies (sounds) above a certain set frequency. The range is from 500 Hz to 12000 Hz.

Filter resonance. On a range of 0 to 15, this allows you to see how effective your filter is. The higher the value the higher the resonance.

Octave. This is the setting at which you play. Don't let all this technical jargon confuse you. As Music Maker say, these are all terms used in the world of the professional synthesist. Experience will soon tell you what does what. The package also contains a song book. This book includes well known titles such as *Sailing*, *When I'm Sixty Four* (do I detect some creeping towards '64 owners!), *She'll Be Coming Around The Mountain*, *When The Saints Go Marching In*, *The Birdie Song* and *The Can Can*. Apparently, in the future, Commodore say they are bringing out The SFX-Composer, which can be run on the same keyboard layover.

Comment

The Commodore Music Maker along with the SFX-Tutor is an excellent package for the beginner and novice, but for the budding Howard Jones' of this world you may like to look elsewhere as Music Maker can only play one tune and voice at any one time, unless you include the background accompaniment.

Sound: 9
Value for Money: 8
Interest: 9
Ease of Use: 9
Originality: 9
Order Code: CMUSMA

We apologise for the fact that this page is blank. It was to have been a story about modems but it took much longer than we anticipated to a) get the modem, b) get Telecom to install the socket and c) get a subscription to Micronet/Compunet etc. Our updated hardware catalogue in the early part of 1986 will contain full details of our experiences. In the meantime, if you use a modem, if you subscribe to any networks (in particular Micronet & Compunet) then please tell us your experiences.

LANGUAGES/ GAMES DESIGNERS

"C" Programming Language

Manufacturer:
Hisoft
Machines:
48K Spectrum,
Spectrum +
Category:
Utility
Reviewer:
Sam Knowles



"C" is fast overtaking Pascal as the language of the moment. It is being given heavy promotion by the creators, industry — which uses it on a large scale for development packages etc — companies like Hisoft which are producing micro-based versions. This one, costing £25 for the Spectrum and Spectrum +, is highly professional and complete. For your money you get the cassette and a red, spiral bound manual of some eighty pages. The package is very similar to Hisoft's Pascal except that the inlay card and manual cover are printed in red! But just what is it about C? What is it in any case? Well, it is a high level programming language which has its roots in Pascal, but even more so in BCPL (of which there is a BBC version). C was created by two gentlemen in the USA, Messrs Ritchie and Kernighan, on the large and highly powerful UNIX system. The beauty of C is that, unlike Pascal and to a far greater extent Basic, it is widely transferable — any differences in dialect can usually be overcome. It is also much more casual in its approach than Pascal and infinitely faster than Basic and far outstrips even Forth. For the 'words' are compiled directly into machine code — in this case into Z-80 op code. On business machines and in universities, C is used to write compilers. The manual which comes with the cassette is an introduction to this particular implementation rather than a teaching course in C.

Constant reference is made to Ritchie and Kernighan's epic "The C Programming Language." It is an excellent introduction and tutor to C. It was published by Prentice-Hall in '78. The price may seem somewhat exorbitant at nearly £17, but when you consider the £25 bargain for the program in the first place, there is little to pay for the user who wants to learn C on a home micro, then move up to using it, say as a system's analyst. The manual is, however, most useful. It gives hints on what the most common mistakes are that are made by novices; it interprets the error numbers and messages, explaining exactly what you have done wrong. It also lists available commands and their necessary parameters. Loading side one of the tape gives you access to the C editor and compiler. On the other side are an input/output header and a library of useful system commands. This is full and Hisoft deserve high praise for its inclusion. You will not be likely to be writing compilers on this version of C; it is a familiariser with the language, and is in itself a useful utility which allows you to write lightning fast programs of all the features of any Basic or Pascal ones with much improved speed. You're writing op code via another name and learning a fast growing language at the same time. Programming in C is fairly easy after Pascal, but you have to drop any preconceptions you have. Any program — which often has line numbers for your peace of mind — has to have a routine beginning: main (). The Spectrum version was originally integer only, and up to the 32K variable limit (up to 32767) as with Pascal. All commands are typed in in lower case. Line numbers are set up by the ixxx,bbbb command, as on the Pascal or Hisoft. I stands for Auto; xxxx is the first line number, bbbb the subse-

quent increment.

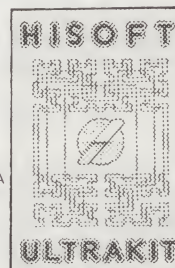
Access to any commercial printer is available — via Centronics or RS-232 ports. Cassette and microdrive can also be fed data and be made to feed it back. The Spectrum's facilities are possible to use, although a copy of Melbourne House's "The Complete Spectrum ROM Disassembly" would be more than useful for transposing parts of the ROM.

C is for the enthusiast and indeed anyone who is prepared to spend the time with such a product. A good buy and excellent value. I'm glad to see implementations of such industry standard, hitherto untouchable languages being passed on to the man in the street with his humble micro. Let's see more of the same!

Order Code: SHIC

Ultrakit

Product Title:
Ultrakit
Manufacturer:
Hisoft
Machines:
16/48K Spectrum,
Spectrum +
Order Code: SULTRA



Hisoft is a very suitable name for the company. Their press releases say that it stands for High quality SOFTWARE. Ultrakit is a prime example of a piece of such. A 7K basic-management toolkit, it fills many gaps of Sinclair's and adds some very powerful facilities to the machine. Hisoft have even gone so far as to include a free tape-header reader on the flip side of the cassette. First rate stuff that, too. Once you have lowered RAMTOP with the customary Clear command so that NEW has no effect on the toolkit, the 7K of code takes no time at all to load. This code sits just beneath the area set aside for user defined graphics, which itself begins at location 65368. What Hisoft have provided is far and away the best toolkit available on the Spectrum with powerful, interactive, easy-to-use functions.

There was never a crash in the three or so hours I used it for tests alone.

Since the Spectrum has single key entry, all toolkit programmers are faced with the problem of how to access additional commands. Ultra-kit circumvents this very smoothly and efficiently. When you want to renumber, for example, you could simply type: REM number 1 10 10. This rennumbers the program, starting from line 1, the first new line being 10, the increment for the following lines being 10. There are no physical separators between parameters which seems somewhat odd at first — there are spaces instead. This soon becomes part of your system. There is a syntax checker built-in which yields error messages.

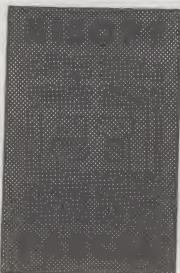
The Commands: are many and varied and all effective. Many are external to the programs you may be writing. Already mentioned is the renumber command. Incidentally, this works on all GO TO's and GO SUB's and the RESTORE keyword. There is a copy command to move chunks of program about. Three touches which are possibly BBC inspired are TRACE, key definition and AUTO. Trace can be global or local. It keeps tabs on the number of operations being performed and also the line number of these operations. Key definition could hardly be simpler. To have key 3, say, to renumber as prescribed above, you simply type: REM key" 3 REM number 1 10 10. To access this, use space as an extra shift key and press 3. Release space and then 3. All the numerical keys can be given extra functions, although I would have expected 5 or 6 to have been ample for programming. Auto allows you to remove yourself from the bind of having to type the line number out every time you start a new line. Furthermore, there are also some rather unusual commands available, and ones which are nonetheless of great use. There is a clock which does slow processing down by 15% when on

screen, but is very useful. To complement this, there is an alarm clock function. Both of these are hideously easy to set. Further, there is provision for use of the TIME variable. Once defined, it is incremented by one every fiftieth of a second. This saves endless definition of functions using the system variables at 23692, 3 and 4. Hisoft also provide a memory map, accessed in the same sort of way as the redefined keys. Enter and 5 are used. (This method is used for access to the clock, alarm and other commands). The memory map displays many useful peeks — the value of RAMTOP, P-RAMT, the start of the udg's, memory left and memory used for both basic and machine code and also size of variable workspace. One final, but very useful set of commands are the packing or crunching commands. There are four separate crunching commands — to kill REM's, compact many statements onto few lines — so long as they're not conditionals — and so forth. On a ten line program, crunching saved me a magnificent 44%. The more reasonable average seems to be in the region of 12 to 20%. This is considerable, and gives scope for an 'extra' 5 or 6K of program — when you have to fit those last thirty rooms into an adventure, for example.

A thoroughly professional package with a highly detailed and helpful manual. It is well worth the price and is streets ahead of its rivals in user-friendliness, ease of use, power and total lack of crashes (in my experience at least). A five star buy; to be highly recommended to either the casual or serious basic programmer. Marvellous!!!

Pascal

Product Title:
Pascal 4T
Manufacturer:
Hisoft
Machines:
16/48K Spectrum,
Spectrum +
Review:
Sam Knowles
Order Code: SPASCA



Hisoft Pascal offers the speed of compiled Z-80

machine code with the human simplicity of a word-orientated language. Not only this, but this implementation of Pascal is first rate, and the Spectrum becomes a more than adequate workspace for the language's compiler, editor and executor. For £25 we have an excellent version of the language which is fast replacing basic as the standard in schools, and more importantly in universities, because of its highly structured nature. Basic is sloppy and 'ungrammatical' by comparison. It is a little strict in its syntax, but the care needed is amply rewarded.

The Hisoft package consists of a cassette and an 81 page ring-bound booklet which is information rather than a course in Pascal. It talks of the peculiarities of this system rather than the language as a whole. If you buy this program you should either be prepared to buy a coaching manual or already be fluent in Pascal yourself. A few manuals are suggested in the bibliography.

Once you have loaded Pascal, the computer asks three questions. The booklet informs you that pressing Enter only sets default values for RAMTOP, RAMTOP for T (the cassette routine) and TABLE SIZE. This done, and following the credits — which to my mind occur too frequently in Hisoft programs — you are in the editor. The computer waits for you to start entering a Pascal program which it will then attempt to compile. Caps lock is on; the cursor is a greater than sign. Programming is started by the 'I' command. This is similar to the auto command on the BBC or indeed in Hisoft's own Ultrakit. 1 10, 10 sets the first line as 10, and all following ones are set ten after the previous one. The language itself is a very traditional version of Pascal — complying to the standard laid down a few years ago in the 'Pascal User Manual and Report' by Jensen and Wirth. It features PROCEDURES, REPEAT....UNTIL loops, traditional BEGIN....END syntax and so forth. It

seems pointless to go through all available commands. That would be a waste of space and boring to those who are not cognoscenti. Basic-junkies might like to know a little more about the language, though. PRINTING is achieved by the fussy command, WRITELN (' '); INPUTs are managed by the READLN command, LN in both cases is an abbreviation for line. Logical operators do not only function by the AND, OR and NOT method. They also use more directly the BOOLEAN logic which lies behind them — TRUE and FALSE, 1 and 0.

The program fills little over 19K, so there is ample room — over 21K in fact — into which your own Pascal programs can be compiled. Once the computer has been set to editing your program, it identifies all errors by means of number codes. There is a section in the manual dealing with identification of these error codes.

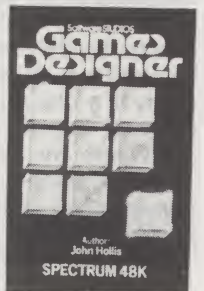
Hisoft has thankfully abandoned the Spectrum convention of single key word entry. They have also, on the face of it, omitted the Spectrum's own features. The colour, sound and graphics have no commands specifically set aside. Access is possible, however. For graphics and sound, ROM routines can be transposed or mimicked. It is possible to use colour, brightness etc... by printing the control codes. For example, WRITE(CHR(17), CHR (3)) has the same effect as the basic command PAPER 3. TAB, AT, newline and flashing control codes can also be accessed. The Spectrum manual deals with these codes in more details — consult the character-set section.

On side two of the tape there is a turtle graphics routine which can be loaded into the machine by the command 'G,,TURTLE'. Because of the very nature of Z-80 machine code, the compiled Pascal turtle graphics are swift in the extreme. Anyone used to the pedestrian Logo package from Sinclair will be amazed by the fast representation

of hexagons, lines and so forth. This is another excellent product from Hisoft — the first they made for the Spectrum, released a couple of years ago — and although rather costly for the average Spectrum user, it is certainly worthy of such a price. It performs well for the most part and the language is a joy to use, if a little strict on syntax — separators etc. Do buy a coaching manual if you are unfamiliar with the language. There are only sample programs in the booklet.

The Games Designer

Computers:
48K Spectrum/ +
Joystick:
No
Category:
Utility
Publisher:
Quicksilver

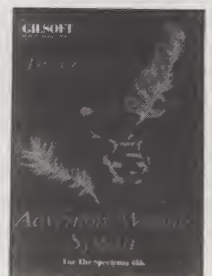


Do you have great ideas for a new game, but are unsure of your programming skills? Well then, this program is for you! No advanced programming techniques are required, and, with the comprehensive instructions you could be writing high quality games, incorporating hi-res graphics, sound, scoring, etc., within a few hours instead of the usual months. Also included are 4 free high quality games for you to experiment with.

Ratings:/10
Graphics: n/a
Sound: n/a
Colour: n/a
Originality: 9
Interest: 9
Order Code: GAMDE

The Quill

Computers:
Spectrum 48K/ +
Commodore 64
Category:
Utility
Publisher:
Gilsot



The Quill is a menu-based adventure writing utility which will appeal to people involved with role-playing adventures, computer adventures, and those who like programming. Adventures written with the

Quill can be marketed but the manufacturers ask that the use of the Quill be mentioned somewhere within the adventure.

The menu is very varied offering features such as telling you the memory left in the computer, and a routine to change the background and foreground colours.

Writing an adventure consists of several stages, and you are advised to do a lot of advance planning before actually setting to work on the computer. A map must be drawn detailing room numbers and directions possible, objects and start locations must be listed, and the entire vocabulary should be defined.

Once this is done the program is a delight to operate. Events within the adventure are contained in a special area known as the 'event table' using two 'key' words to trigger a response. These words must be typed by the player in order for a response to take place although they may be anywhere within the input. This table is scanned every time a command is typed. Another important table is the Status Table which is checked every move. This can be used to make a character go hungry after a specified number of moves etc.

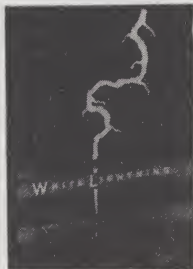
Location descriptions can take up a whole screen if needed although this will, of course, use up more memory. The program can handle up to 252 locations. The adventures that you write can be saved in two ways; as a database which can be reloaded into the main program to be continued with, or as a separate program which can be loaded independently from the main program. The latter is the form in which they can be sold. Full verification is possible so data loss is rare. Adventures produced using the Quill are unfortunately "text-only" but Gilsoft have now produced another utility, the Illustrator, which allows pictures to be added to adventures. A full manual is supplied detailing all the possible features, and a sample adventure is included for the purchaser to enter, thus familiarising

himself with all sections of the menu.

Order Code: Spectrum — SQUILL
Commodore 64 — CQUILL

White Lightning

Manufacturer:
Oasis Software
Machines:
48K Spectrum,
Spectrum +;
CBM 64
Category:
Utility
Reviewer:
Sam Knowles



Oasis themselves describe their package as 'the key to professional games design'. This boast will not be believed by anyone before they spend many, many hours of checking and learning two new computer languages and becoming extremely frustrated by constant errors and failures. Perseverance, however, certainly does bring good results, and the sometimes hidden standard of the software really does start to shine through after those hours of head-scratching and manual reading. White lightning is made up of three parts, two programs. WL itself is based on two languages namely Spectra-Forth — as they call it — and IDEAL. The latter stands for Interrupt Driven Extended Animation Language, the former is a standard version of fig-Forth. The second program is a sprite-generator. This is complementary to WL, which itself has many, many sprite manipulation commands. Indeed, IDEAL is almost solely given over to this.

Up to 255 sprites can be defined; this takes up to 12500 bytes of memory. Entry of sprite data is achieved by two methods. The first should be familiar to all Spectrum owners. It is the method adopted by Sinclair in their 'Character Generator' program on the 'Horizons' tape. A flashing cursor is moved around the screen — grid, that is — and is set down wherever you want to have a square, which will become a pixel. The second method, in fact easier because of the work needed beforehand, is by what Oasis call DDI —

Direct Data Input. To non-jargonists this means you type in numbers! Hexadecimal or plain decimal numbers can be entered. As I said before, WL is split up into two parts. First for 'Spectra-Forth'. As the nature of Forth is to build up new commands, whole routines become just words with Spectra-Forth. The version, as is standard, is integer only. The reason for the high quality scrolls and movement which come from WL is the fact that Forth is based on integer only mathematical transformations. Furthermore, since it is such low level language — that is, not far from machine code once it has been 'compiled' — it is extremely fast. There are eighty commands available, listed by the traditional VLIST command. You can add many of your own. Furthermore the reason for the name Spectra-Forth is that many of the useful commands of the Spectrum have been set aside for access from Forth. These are the sound, graphics and colour setting commands. Protocol for setting them is à la Forth, however. To set green paper and black ink, you type: 4 0 PAPER INK. Easy language to master, is Forth.

The second element in WL is the highly original IDEAL. This is mixed with the Forth, although if you have no grasp of Forth at all, IDEAL words can be accessed from Basic. The result of this is not quite so smooth as from Forth, but it is perfectly adequate. Ideal words look very odd indeed, until, that is, you realise that they are made up from strings of mnemonics. For example, SC stands for scroll without wrap; WR for scroll with wrap. And so, by a little logical deduction, we can infer that SCR8V means scroll the specific sprite eight pixels to the right, vertically. All commands are built up in this way, and this system actually does make it far easier to program. There is none of the trouble of assigning variables and loops and so forth. Incidentally, there are 21 variables set aside for use in WL, so you don't

have to worry about the acceptance of particular words by the Ideal interpreter as variables. For example, when defining screen windows you use the variables ROW, COL, HGT and LEN — completely self explanatory. IDEAL makes it very easy indeed to manipulate the sprites you have made, once you have selected which one you are going to deal with. Not only do you have the chance to manipulate the sprites that you have defined yourself. In the sprite generating program, there are 167 predefined sprites for you to make use of. Included there are the perennial favourites of the arcades and home computer games: pacman, space invaders, asteroids — ships and rocks — scramble, defender, city bomber, frogger, centipede, tank battle, kong and so on. These can be adapted or totally redefined and then loaded into WL for manipulation.

White lightning is at first a little daunting. I felt that this review would never materialise. After a few hours slog, and some comforting references to the demonstration programs, I got quite far. I even had some banks of invaders scrolling smoothly down the screen at different speeds; pacmen devouring dots, pursued by hell-bent ghosts — too hell-bent, I think. I shall have to get a greater comprehension of Forth. The package is only worth it if you are dedicated to spending a long time at the keyboard for what are, initially, not all that glamorous effects. You shouldn't expect miracles within the first five minutes. Oasis never promised that in the first place. However, because of its very complexities, its possibilities are almost infinite and it is extremely fast, flexible and highly powerful. Other versions, almost identical as programs, are available; microdrive compatible for the Spectrum. There are 3 versions for the CBM 64 — Basic, White and Machine Lightning.

Order Code: Spectrum — SWHILL
Commodore — CWHILL

Price List

(Effective 18th September 1985)

Supersedes all previous listings

The prices given below and on the next page cover our complete range of joysticks, interfaces, keyboards, books, business programs, utilities and more. Not every product is reviewed in this supplement — you'll find other popular products in the list — all at discount prices. The rules are exactly as for the magazine — you can buy one item at the 'Bonus' Price for every item purchased at the 'Club' Price.

ORDER CODE	PRODUCT TITLE	PUBLISHER	RETAIL PRICE	CLUB PRICE	BONUS PRICE
STHEAR	ARTIST (THE)	SOFTTEK	12.95	11.15	
*CAHAT	AZIMUTH HEAD ALIGNMENT TAPE	INTERCEPTOR	8.95	6.95	
*SSIXPA	BASIC/FORTH/ZEUS/PRINT ETC	PSION	70.70	60.00	14.95
EMI20	BLANK CASSETTE (15 MINS)	VARIOUS	0.60	0.50	
CBREBA	BREEDON'S BASIC	VISIONS	39.95	34.95	
*SHIC	C - THE LANGUAGE (SPECTRUM)	HI-SOFT	25.00	19.95	
C2N	C2N CASSETTE DECK	COMMODORE	44.95	39.95	
CURSP	CURRAH SPEECH	CURRAH	29.95	27.95	
CUR64	CURRAH SPEECH 64	DK' TRONICS	29.95	27.95	
CDESPE	DESIGNER'S PENCIL	ACTIVISION	11.95	9.95	
*CDUSCO	DUST COVER (COMMODORE 64)	ANIROG	6.95	6.30	
CEASSC-D	EASYSOFT (DISK)	COMMODORE	75.00	67.50	
CEASSP-D	EASYSPELL (DISK)	COMMODORE	50.00	45.00	
*SZXEXP	EXPANSION PACK - INT1/MICDR	SINCLAIR	99.95	94.95	
DISCS10	FLOPPY DISKS SS/DD BOX OF 10	ZIDEX	28.00	19.95	
*SGAMDE	GAMES DESIGNER (SPECTRUM)	QUICKSILVA	14.95	12.70	
GTH-B	GUIDE TO PLAYING THE HOBBIT	MELBOURNE HOUSE	3.95	3.95	
SILLUS	ILLUSTRATOR (THE)	GILSOFT	14.95	11.75	
SCOMCO	INTERFACE - COMCON	FREL	19.95	18.95	
DKPCI	INTERFACE - DK CENTRONICS	DK TRONICS	39.95	36.95	
DKPJI	INTERFACE - DK PROGRAMMABLE	DK' TRONICS	22.95	19.95	
DKJIN	INTERFACE - DK' TRONICS D/PORT	DK' TRONICS	13.00	11.50	
INTER	INTERFACE - KEMPSTON	KEMPSTON	9.95	9.45	
*KEMPRO	INTERFACE - KEMPSTON PRO	KEMPSTON	18.95	16.95	
TURBO	INTERFACE - TURBO	RJH	22.50	20.65	
INT1	INTERFACE 1 - SINCLAIR	SINCLAIR	49.95	47.95	
*SINT3	INTERFACE III	EVESHAM MICRO	39.95	37.95	
COMPRO	JOYSTICK - (COMPETITION-PRO)	EUROMAX	17.95	16.95	
*ARCADE	JOYSTICK - ARCADE	SUZO	15.95	13.95	
*ARCPRO	JOYSTICK - ARCADE PROF.	EUROMAX	29.95	27.95	
*CHALL	JOYSTICK - CHALLENGER II	EUROMAX	12.95	10.85	
*COMPSP	JOYSTICK - COMPUTEK SPECIAL	EUROMAX	9.95	8.95	

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ORDER CODE	PRODUCT TITLE	PUBLISHER	RETAIL PRICE	CLUB PRICE	BONUS PRICE
FORM2	JOYSTICK - KEMPSTON FORMULA 2	KEMPSTON	11.95	10.95	
QUICK	JOYSTICK - QUICKSHOT II	SPECTRA-VIDEO	11.95	10.95	
SLIST	JOYSTICK - SLIK STIK	SPECTRA VIDEO	8.95	7.95	
ATAJOY	JOYSTICK - STANDARD ATARI	ATARI	6.95	5.90	4.85
SUPMIC	JOYSTICK - SUPREME MICRO	SUPREME	19.95	18.95	
*SUPAT	JOYSTICK - SUPREME SURESHOT	ATARI	19.95	17.95	
*TRACK	JOYSTICK - TRACKBALL	EUROMAX	32.95	28.65	
DKKEY	KEYBOARD - DK'TRONICS	DK TRONICS	39.95	36.95	
LOWPRO	KEYBOARD - LOW PROFILE	LOW PROFILE	49.95	46.95	
SAGA	KEYBOARD - SAGA EMPEROR	SAGA	49.95	44.95	
SLEONA	LEONARDO	CREATIVE SPARKS	7.95	6.75	
*SLIGMA	LIGHT MAGIC	NEW GENERATION	14.95	12.95	
LIGPE	LIGHT PEN	DK'TRONIKS	19.95	16.95	
*CMCT	MACHINE CODE TUTOR (C-64)	NEW GENERATION	14.95	12.95	
*SMCT	MACHINE CODE TUTOR (SPECTRUM)	NEW GENERATION	14.95	12.95	
MAS64-B	MASTERING THE COMMODORE 64	ELLIS HORWOOD	6.95	6.95	
SMELDR	MELBOURNE DRAW	MELBOURNE HOUSE	8.95	7.60	
CMICMA-D	MICRO-MAGPIE (DISK)	AUDIOGENIC	39.95	36.95	
CMICSW-D	MICRO-SWIFT (DISK)	AUDIOGENIC	19.95	17.75	
MICCA	MICRODRIVE CARTRIDGE	SINCLAIR	1.99	1.89	
MULTI-D	MICROSOFT MULTIPLAN (DISK)	HESWARE	95.00	85.50	
CMINOF	MINI-OFFICE (COMMODORE)	DATABASE	5.95	4.60	
SMINOF	MINI-OFFICE (SPECTRUM)	DATABASE	5.95	4.60	
*CMUSMA	MUSIC MAKER	COMMODORE	29.95	26.95	
*SMUSTY	MUSIC TYPEWRITER	ROMANTIC ROBOT	9.95	8.45	
*CPASCA	PASCAL	OXFORD COMPUTERS	22.95	21.90	
*SPASCA	PASCAL (SPECTRUM)	HI-SOFT	25.00	19.95	
CQUILL	QUILL (THE) - COMMODORE	GILSOFT	14.95	11.55	
SQUILL	QUILL (THE) - SPECTRUM	GILSOFT	14.95	11.75	
RAMUPG	RAM UPGRADE KIT - 16 TO 48K	RAM	21.95	21.95	
SRS232	RS 232 LEAD - FOR INTERFACE 1	SINCLAIR	14.95	14.95	
SG64-B	SOUND AND GRAPHICS (BOOK)	MELBOURNE HOUSE	5.95	5.95	
*SMDB-B	SPECTRUM MICRODRIVE BOOK	MELBOURNE HSE	5.95	5.50	
SPSWI	SPECTRUM ON/OFF SWITCH	SUPER SELLERS	4.95	4.45	
*SP+SW	SPECTRUM PLUS ON/OFF SWITCH	SUPERSELLERS	4.95	4.45	
CSUPER-D	SUPERBASE 64 (DISK)	PRECISION S/WARE	99.95	89.95	
*CSUPSC	SUPERSCRIPT (DISK ONLY)	PRECISION	69.95	59.95	
*CSUPTY-D	SUPERTYPE (DISK)	PRECISION	25.95	21.95	
*CSUPTY	SUPERTYPE (TYPING TUTOR)	PRECISION	19.95	17.95	
*STASCO	TASCOPY (SPECTRUM)	TASMAN	10.90	8.90	
*STASME	TASMERGE (SPECTRUM)	TASMAN	10.90	8.90	
*STASPR	TASPRINT (SPECTRUM)	TASMAN	9.90	8.45	
*CTAS2	TASWORD TWO (COMMODORE)	TASMAN	13.90	10.75	
STAS2	TASWORD TWO (SPECTRUM)	TASMAN	13.90	10.75	
TELEV	TELEVISION (SINCLAIR POCKET)	SINCLAIR	99.95	94.95	
TVBAT	TELEVISION BATTERY	SINCLAIR	9.95	9.95	
ULTIS	ULTISYNTH (COMMODORE 64)	QUICKSILVA	14.95	12.95	
*SULTRA	ULTRAKIT (SPECTRUM)	HI-SOFT	9.95	8.30	
CVOICE	VOICEMASTER (COMMODORE 64)	COMMODORE	59.95	54.95	
CVOICE-D	VOICEMASTER (DISK)	COMMODORE	61.95	56.95	
*SVUPAC	VU 3D/VU-CALC/VU-FILE (48K)	PSION	26.85	22.00	5.95
CWHILI	WHITE LIGHTENING (COMMODORE)	OASIS	19.00	17.00	
CWHILI-D	WHITE LIGHTENING (DISK)	OASIS	29.95	27.25	
*SWHILI-M	WHITE LIGHTENING (MICRODRIVE)	OASIS	19.95	15.95	
*SWHILI	WHITE LIGHTENING (SPECTRUM)	OASIS	14.95	11.55	

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